THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

VOL. IX. No. 195—12th YEAR.] LONDON, APRIL 10, 1860. [Subscription per Ann. { 15s. in Advance / 18s Credit.] DOUBLE No. Price 1s.

TO GAS COMPANIES.

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The Advertiser has brought his Fire-Clay Retorts to great perfection, both as to quality and finish. Many have stood three and four years.

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March 27, 1860.

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30 Circular Retort Mouth-Pieces, and 60 Lids;

8 Furnace Doors and Frames;

A Governor with Cast-Iron Tanks, several Tar Cisterns, Hydraulic Cup Valves, and a large quantity of old Castings.

Particulars as to size, price, &c., will be forwarded on application to Mr. J. L. COCKER, Gas-Works, Merthyr Tydvil, GLAMORGANSHIRE.

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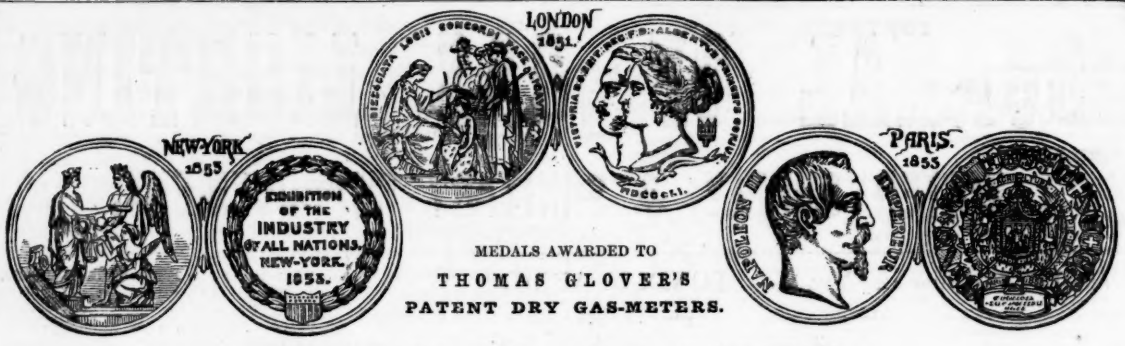

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JOURNAL OF GAS LIGHTING
NEWSPAPER

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ERRATA.

At page 186, second column, 9th line from the bottom, *for* "2½ per cent.," *read* "52½;" and *for* "2 per cent.," *read* "42."

In line 5 from the bottom, *for* "lime," *read* "liquor."

At page 187, first column, 26th line from the bottom, *for* "Mr. Stevenson replied £65,000," *read* "Mr. Stephenson replied £6000."

TO CORRESPONDENTS.

A. G., Armagh.—*A cubic inch of water weighs 252·458 grains, and an ounce of water is 437·5 grains. One ounce of water per square inch is consequently equivalent to a column of water 1·734 inches high, or to 17·34 tenths of an inch. A well made wet gas-meter will, when new, be set in motion by a pressure of one-tenth of an inch, and will attain its maximum speed of 100 revolutions per hour with a loss of about three-tenths pressure.*

NOTICES.

The subscription is 15s. per annum, if paid in advance during the month of January, or 18s. credit, in two sums of 9s. each, in July and January of each year. Post-Office orders must be made payable at the Charing-Cross Money-Order Office, to William H. Bennett, No. 42, Parliament Street, Westminster.

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THE JOURNAL OF GAS LIGHTING, WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, APRIL 10, 1860.

NOTES UPON PASSING EVENTS.

One of the most curious, but certainly not one of the most creditable, events of the scientific world which has happened of late, is the fierce quarrel now raging in the *Académie des Sciences* between Messrs. Leverrier and Delaunay, on the subject of the Theory of the movements of the Moon propounded by the latter astronomer. At present, it would appear that the arguments of M. Leverrier are more correct than those of his opponent, and that it is hard to reconcile the actually recorded observations of lunar eclipses, with the indication of the new theory; but the discussions connected with this question have been carried on with such violence, and with so little regard to the ordinary decencies of society, that it becomes necessary for all parties interested in maintaining the dignity of science, to protest against the introduction of such bad passions into what should be calm and philosophical inquiries. It seems, somehow or another, that cultivators of abstruse science are often exposed to forget "the proprieties;" and certainly some of the most distinguished Astronomers have been the most notoriously ill-tempered of men. M. Leverrier seems to endeavour to keep up this ill-starred reputation of his class; and, whilst reading the recent "*Comptes Rendus de L'Académie*," we could not refrain from feeling strongly the inconvenience the public would be exposed to, if the direction of the affairs of the world were thrown into the hands of men of such a stamp—as there seems to be a strong tendency to do both at home and abroad. Perhaps there may be little danger of our consulting Astronomers in political matters for some time to come; but we see that already they have been consulted in practical commercial affairs, and we know that the dabblers in transcendental statistics are labouring hard to effect alterations in municipal law in accordance with their own crude fancies. It behoves the public, therefore, carefully to weigh the merits of their proposed new guides; and perhaps the story we have referred to may enable it to do so in one sense at least, viz., that it may serve as an illustration of the injurious tendency for the ordinary purposes of life of an exclusive development of any one class of the intellectual faculties.

At one of the recent meetings of the *Académie des Sciences*, attention was also called to the occurrence of a new form of endemic disease which had been observed in the *arrondissement* of Villefranche (*Haute Garonne*) during the hot season of last year. It seems to have partaken of the nature of the sun-stroke, but to have presented some peculiar pathological symptoms; and though painful, and even dangerous when neglected, the disease yielded easily to a treatment of a vigorous, but ordinary character. There does not seem to have been anything very remarkable either in the matter, or the form, of the note by M. Duclaux which gave rise to this discussion; and it would hardly have been worth our while to allude to it, were it not that every such instance of the formation of new diseases proves how ridiculous it is to assert that there is any absolute numerical law of sickness, or of mortality. These things must necessarily be contingent upon a countless number of accidental circumstances; and, at any rate, our knowledge of the real laws of nature which influence the above-named effects is so limited, and so uncertain, that it must be extremely dangerous to argue, or to tamper, with existing political organizations, on the inferences drawn from such imperfect science.

The writers upon subjects connected with physics throughout Europe seem now to be much engaged in the discussion of the cause, and effect, of the great electrical disturbances which marked the close of the late dry hot summer; and amongst other curious remarks made upon the subject of the appearance of the aurora borealis, there was one confirmatory of the opinion that such appearances are almost always succeeded by violent gales from the south west, at intervals of two or three days. This fact, if fact it should be, ought not to escape the notice of our mariners, and it may incidentally serve to throw some light on the law of storms—a subject of some importance to constructors, for at Lyons the aurora borealis of 17th November last was followed by a gale which threw down several chimneys. The most decided effects of the electrical disturbances exhibited by the aurora were, however, discernible in the great perturbations they produced in the lines of the electrical telegraphs; and it would also appear that the number of shooting stars, as they are called, was much greater than usual during the occurrence of the phenomenon. The very remarkable character of the winter we have lately passed may, perhaps, have been in some manner or other affected by the same series of causes which produced the brilliant auroras of its commencement; and as it is evident that the public health of our own country has been in a more than usually unsatisfactory state throughout the season, it might be desirable to investigate whether, or not, there be any connexion between the telluric emanations Dr. Parkyn considers to play so decided a part in the causation of disease, and the state of atmospheric electricity.

Whilst upon this subject, it may be interesting to add that the experiments of M. Douhet upon the treatment of the sulphate of zinc forming the residue of the baths of Voltaic batteries, appear to show that a considerable reduction in the cost

of the production of electricity may be hoped for. The system hitherto adopted by M. Douhet consists in treating the solution of the sulphate of zinc by the sulphuret of barium, and the product is said to be a double precipitate of the sulphate of barium and of the sulphuret of zinc, which, when subsequently mixed, constitute a valuable substitute for the white lead, or white zinc, of commerce.

A valuable series of observations have lately been made by M. Gigot (of Levroux) upon the composition of marsh vapours, which may be regarded as throwing additional light upon the questions lately raised by Dr. Angus Smith, in his paper on the Air of Towns. M. Gigot has attempted to ascertain the nature of the deleterious agents of those vapours, by passing the air of marshy districts in large quantities through sulphuric acid; and by this process the organic and mineral substances in suspension in the atmosphere are retained by the acid, which becomes blackened by the combustion of the organic matters thus retained. M. Louis Figuier (from whose interesting work, "*l'Année Scientifique*," 1860, we have extracted this, and much other information) objects, however, with much reason, that the combustion of the organic matters renders it difficult to arrive at any just conclusions as to their original constitution; and he equally objects to the hasty generalization by which Dr. Gigot is led to attribute the diseases which prevail simultaneously with the diffusal of marsh vapours to the organic detritus floating in the air. The theory propounded by M. Gigot is really the same as the one propounded by the Registrar-General of England, and his followers; and it is, therefore, satisfactory to us, who have always contended that such doctrines only contained a part of the truth of the question, to find that such men as Figuier agree with our own views. This important branch of sanitary science is far from having yet been thoroughly studied as it merits; and we can but urge Dr. Angus Smith to continue, as he has begun, his valuable researches. Before quitting the consideration of the recent researches of our neighbours in these matters, it may be of interest to add that a new theory of the origin of the Cholera has been proposed in France—viz., that it has a direct relation to the hygrometric state of the atmosphere; or, in other words, that it is most virulent in the driest situations. We wonder what the Registrar-General would say to this theory, which is certainly as unsatisfactory as any of the countless ones he has himself suggested?

In the Metropolis, very little seems doing, in matters connected with the Public Health, beyond occasional persecutions of industry, under the provisions of the Smoke Nuisance Abatement Act; or the increase of the capital of the Water-Works Company, for the purpose of supplying the ever-extending suburbs of London. The Metropolitan Board of Works is vigorously engaged in the exercise of its taxing functions, and it is slowly proceeding with the great undertaking it was called into existence to effect; but, in the meanwhile, the officers of the Board have succeeded, one after another, in obtaining increased salaries at the expense of the ratepayers, without much reference, we must say, to the merits of the men thus favoured. The Serpentine Committee have made up their minds to stop the works lately undertaken for the purification of that lake; and, perhaps wisely, to defer the execution of any definite measures until the new sewers across Hyde Park, for carrying off the overflow from the Bayswater Brook sewer, shall be completed. This decision is said to have been arrived at simply by the casting-vote of the Chairman; and its unsatisfactory nature is rendered even more than ordinarily unsatisfactory, by the lack of moral courage, on the part of the majority, in refraining from an expression of opinion on the subject of Sir J. Shelley's pet scheme of pumping from "Goose" Island, as Lord Fermoy is said to have named the Sewer well, which the "Tyburnian or Westbournian" agitators have brought so unblushingly before the public. We observe, moreover, that Dr. Letheby, in his last Report on the health of the City, dwells at some length on the increased number of deaths from small-pox in his district: and that he announces that he is engaged upon some investigations into the subject of the statistics of vaccination, and upon the means to be adopted to ensure the efficiency of that process. We beg, however, to suggest to the worthy Doctor, that he seems to us to have overlooked the more important part of the investigation thus brought before him; for the real questions now to be decided are, whether, or not, vaccination produce results able to counterbalance the security it is said to offer against the ravages of small-pox; and whether any real permanent security be attained by the adoption of vaccination. There is a sad want of courage, on the part of our leading scientific men, in thus declining, as they so unanimously do, to examine opinions opposed to those generally received in their day; and most earnestly do we hope that the public will refrain from giving itself over to such "blind guides."

Lord Ebury, the champion of so many Quixotic fancies, has attempted of late to get up an excitement against the conversion of a part of old Smithfield Market into a dead meat market. It may be suspected that the noble Lord never lived, or passed much of his time, either in Newgate Street, or in the classic neighbourhood of Smithfield; or we are sure that he would not have sought, in any way, to oppose the execution of a project which was avowedly designed to remove the obstructions of the former, and the abominations of daily occurrence in the latter, locality. The noble Lord in fact, like the bulk of the so-called Liberals, has, we suspect, only looked at the question he seeks to solve from his own point of view; and he is utterly ignorant of the wants of the public, or of the facts of the case. No doubt it would be desirable to retain as many, and as large, open spaces as possible in the heart of London; but Smithfield, in its present state, is simply a gigantic nuisance, and there is only a small probability of its ever becoming otherwise, unless the proposed Dead Meat Market be erected. Newgate Market is also an intolerable nuisance where it is—just like Leadenhall Market also—and it would be a real service to the dwellers, or the passers by, of the former of those places, to transfer its business (that is to say, of Newgate Market) to the solitudes of old Smithfield.

There appeared in the number of the *Times* for Friday last an extract from the *Lancet*, in which there was a bitter attack upon the Metropolitan Board of Works on the score of their advertisements for a supply of a disinfecting fluid for the Thames during the approaching summer. Of course, it is easy to understand why the *Times* should go out of its way to diffuse anything likely to injure the Metropolitan Board; because it is tolerably well known that since the friends of the anonymous writers of that Journal were not selected for the posts of influence and profit by the Board, the *Times* has persisted in a systematic course of hostility to the men who dared thus to exhibit a spirit of independence; and it has always sought, *per fas et nefas*, to destroy their influence, or to thwart their plans. No doubt the Metropolitan Board and their advisers are liable to errors, just as the writers of the *Lancet*, or even of the *Times*, are; but, *primâ facie*, we are more inclined to pin our faith on such men as Messrs. Hofmann and Frankland, than we are upon any anonymous critics. At any rate, the answer of Messrs. Hofmann and Frankland has not yet appeared, and there is, under such circumstances, gross injustice on the part of the *Times* in converting an *ex parte* attack upon one of *their* Reports into a public accusation "of the bad works of *the Metropolitan Board*." As to the supply of the fluids required for the disinfection of the Thames, it is but reasonable to suppose that the Board would not have adopted any measure for that purpose without due consultation with their chemists; and that the specification of the goods required must have been drawn up with their concurrence. If this be actually the case, the public may be tolerably sure that all which can reasonably be expected, for remedying the foul state of our main cesspool, will be done. The worst of the matter is, however, that the application of any fluid can be but a partial remedy for a gigantic nuisance; and the primary error after all consists in the injudicious haste with which the Thames has been converted into a receptacle for the filth of London. For our own parts, we look upon all these processes for the temporary disinfection of the Thames, very much in the light of Dame Partington's attempts to mop up the Atlantic. No real good can be effected until the main intercepting sewers are executed; and the *Times* would render far more efficient service to the public by urging forward and assisting the Metropolitan Board in the execution of this great work, than by its present course of attempting to undermine the influence of the Board by inserting every description of unfavourable, or interested, criticism upon its proceedings.

There is one recent "agitation" with which we confess that we entirely sympathize, namely, the agitation of the *Times* against the use of short measure, and of false marks, in business transactions. "*Caveat emptor*" is, no doubt, the real principle upon which questions of bargain and sale ought to be conducted; but there are circumstances under which the majority of the public are utterly unable to protect themselves,

and when they must, to use a common phrase, buy upon faith in the trade marks. There should, then, be some protection against the disgraceful frauds of the bottle-merchants, the brewers, or the cotton reel-makers, and, we may add, against those of nail-makers, or even of some gas-meter manufacturers; but how is it to be attained? It seems also that the gross mismanagement of the General Post-Office is likely to be forced upon the attention of the Legislature, and that an attempt may soon be made to put a stop to this new description of administrative tyranny. The Lighthouse system of our shores has been lately brought before the House of Commons, in the usual *dilettanti* style of our modern statesmen. What a pity it is that these grave questions should be treated with such neglect as they seem destined always to be exposed to, in our so-called essentially practical country; and that, even though the lives and fortunes of thousands are bound up in them, those questions should be left to the care of mere placemen!

In the provinces, it seems that the local authorities are, as a general rule, exerting themselves to remedy existing defects in the Sanitary arrangements of their districts; but we do not hear of the commencement of any new or important undertakings of the description which falls within our ordinary range of observation. The Commission for ascertaining the best mode of applying the sewerage of towns would seem not to be defunct; for, it has lately issued a series of questions to various local authorities, for the purpose of ascertaining whether injurious effects are produced by the existing arrangements for the disposal of the materials collected at the respective outfalls of town drains. The task the Commissioners have undertaken is an Herculean one; and most earnestly do we wish them success. The greatest difficulty they will encounter lies precisely in the exaggerated notions, with respect to the value of town sewerage, which some of the members of the Commission have themselves laboured to diffuse; and, until the public is made to feel that the disposal of that sewerage must entail a serious outlay to the towns wherever it is attempted, there will be but little chance of the success of any general measure for that purpose.

Abroad, the disturbed state of political affairs seems to have paralyzed the spirit of private enterprise, and to have turned the attention of Governments from domestic improvements to providing the means of aggressive warfare. Possibly, the Savoy provinces may gain by their transfer from the *poco curante* Piedmontese Administration to the infinitely more energetic Administration of France; and they may gain an immunity from the ravages of the Goitre at the expense of their local liberties. But elsewhere, throughout the Continent, material progress is effectually arrested; so far at least, as we can learn from Journals and Reviews. Further still afield, however, there is more activity to be discovered; and not only are the great Irrigation works of the Madras provinces, and the Railways of Bengal and the Punjaub, rapidly proceeding, but it would appear even that in Australia efforts are about to be made to counteract in some manner the natural causes which alternately expose that part of the world to droughts, or to floods. And whilst these atmospheric disturbances are attracting the attention of our vigorous offshoots, it would also appear that in North and South America the same natural laws are producing the same natural effects; for the dwellers on the banks of La Plata and the Orinoco, equally with those of the valleys of the Illinois and the Missouri, are already anticipating a drought in the course of the next summer. In all these instances, an example of the remedy to the evil has been furnished by nature itself. The creation of large artificial lakes, for the purpose of regulating the flow of the water furnished by the rainfall, is the only mode of effectually dealing with the respective cases. But it is certain that local circumstances may materially affect the expediency of undertaking works of this description, which must always be costly both to make and to maintain in good order when made.

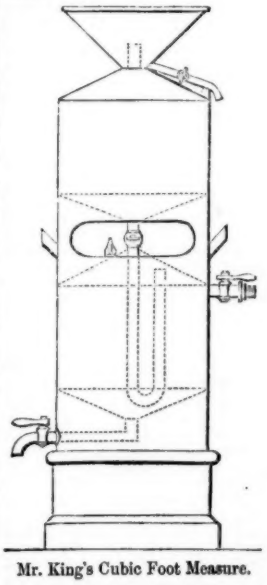
Under this head, a paragraph relative to the proposed formation of an Association of Gas Engineers was inserted in our last issue without the knowledge of the Editor, who was at the time prostrated by sickness. We quite approve of the object in view, but we apprehend so important a movement would have greater chance of success had it originated with a general meeting of the profession, rather than at a midnight convivial meeting of some ten or a dozen members of it. We are decidedly of opinion that, in the interest of the movement, its promoters would do well to call an early meeting of the profession, before they settle the rules and regulations, or the organization of the association. The names of many influential parties are omitted in the list of those whose co-operation is to be solicited as members of the council; and, knowing the importance of a fair start, we trust our hints will not be overlooked.

OFFICIAL PLAGIARISM.

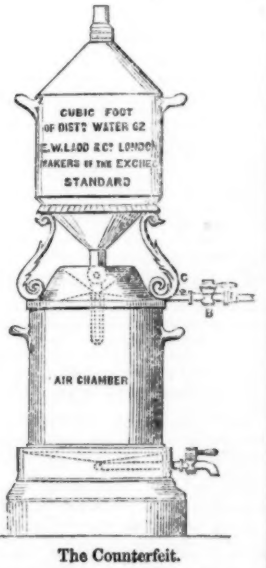
We have heard so much about the Astronomer Royal's bottle, that there is some danger lest he should obtain the credit of being the inventor of the form of vessel contrived for the accurate measurement of a cubic foot. It is now upwards of four years, when, in answer to the question, "What is a cubic foot of gas?" we drew attention to the ingenious instrument contrived by Mr. Alfred King, of Liverpool, and then used by him for some years as a cubic foot measure. We explained, at the time, the principle of its construction, and a proof of the great care with which Mr. King prepared the instrument has recently been afforded by comparison with what is called the Astronomer Royal's cubic foot bottle.

It would have been opposed to the impractical regulations of the Circumlocution Office to have adopted so simple and effective a contrivance, invented by a private individual; therefore, when required to deposit a standard cubic foot measure, they set their own officers in motion to invent and construct an independent instrument. In pursuing that course, however, the plan that seems to have been adopted was to commence by taking Mr. King's instrument to pieces; and, having extracted the upper vessel, or cubic foot bottle, they made a duplicate of it, and deposited that copy, with due form, at the Exchequer Office, as an original standard instrument. Having accomplished that feat, the remaining portion of Mr. King's instrument, the whole of which he called a "cubic foot measure," was treated as a separate vessel, and was also deposited at the Exchequer Office as the "gasholder" required to be provided by the third section of the Sale of Gas Act. Thus, after having divided Mr. King's cubic foot measure into two vessels, and given them separate names, the Circumlocution Office would have reposed from their labours, had it not been for the active exertions of the meter manufacturers, and others, who were determined, if possible, to prevent the object of the Act from being so frustrated.

The *protegés* of the Circumlocution Office having been driven from their untenable position, were anxious to show how the cubic foot measure might be applied to graduate real gasholders by restoring the two instruments to their original connexions. Not, indeed, as constructed by Mr. King; for in his instrument, the bottle is enclosed and protected by a metallic case, whereas in the prototype, the bottle is completely exposed to injury. The annexed diagrams show the two:—



Mr. King's Cubic Foot Measure.



The Counterfeit.

The manufacturer's price for the genuine article is £14; the price of the counterfeit is £15—viz., £12 for the bottle, and £3 for the air-chamber.

Mr. King is not a man to set forth his claims to the invention, but the plagiarism is so gross, that most other inventors

would have given the Circumlocution Office and their *protegés* some trouble before they would have submitted to have their well-earned fame disputed. Though the members of that office are above participating in gains to be derived from such appropriation of the inventions of others, they should be careful not to encourage any jobbery, by which the *amour propre* of inventors is wounded, and the interests of independent tradesmen may be prejudiced.

STRUGGLES OF THE SALE OF GAS ACT IN THE CIRCUMLOCUTION OFFICE.

THE wily ways and tortuous mazes of the Circumlocution Office continue to endanger the progress of the Sale of Gas Act, and the words of promise recently uttered in Parliament, that seemed to afford some hope of a fair start and a satisfactory trial, have been chilled down by exposure to disheartening blasts, which have greatly diminished the genial temperature of hopefulness that inspired the gas-meter trade when the last number of our JOURNAL was published. We shall proceed to recount these incidents, with the addition of such notes and comments as may serve to explain the new phases of the question. The result of the promises held out in Parliament of a speedy removal of all difficulties, was the following Treasury minute:—

SALE OF GAS ACT.

TREASURY MINUTE, DATED MARCH 24, 1860.

My lords have under their consideration the letter from the Lords of the Committee of Privy Council on Trade of the 16th inst., and also a letter from the Astronomer Royal of the 12th inst.

The lords of the committee state, as the result of a discussion and explanation which took place in their lordships' presence, between the Astronomer Royal and a deputation of gentlemen engaged in the manufacture of gas and gas-meters, that their lordships have been led to form the opinion that the Act, in its present form, does not exclude the adoption of a procedure by which the objects may be effected for which the Astonomer Royal recommended further legislation, and that it is desirable to allow the Act to come into operation, in its present form, in order that the sufficiency of its provisions may be tried.

The third section of the Act directs that models of gasholders measuring the cubic foot shall be carefully made, with proper balances, indices, and apparatus for testing the measurement and registration of meters, and shall be verified and deposited in the office of the Comptroller-General of the Exchequer.

My lords have already provided the weight, the metallic bottle, and the instrument sometimes called "transferrer," but which they designate the "gasholder;" considering, from the Astronomer Royal's report of the 11th of February, those to be the instruments and apparatus described in the Act.

The Astronomer Royal, in his report of the 11th of February, states (par 16), with reference to another instrument (the gas-measurer), that although it cannot be brought for verification to the Exchequer Office, nevertheless, as it is the instrument upon which the testing of every meter will depend, it ought to be verified and attested by an authority superior to that of the ordinary inspector.

The deputation of manufacturers, it appears from the Astronomer Royal's letter of the 12th inst., in their interviews at the Board of Trade, have urged that models of the gas-measurer ought to be deposited at the Exchequer, as well as the other instruments already provided, and that copies of those models required for local use ought to be verified and stamped at the Exchequer Office; urging further, that the wording of the Act sanctions the course which they recommend.

The Astronomer Royal, by his letter of the 12th of March, appears to modify his opinion that the gas-measurers could not be brought for verification to the Exchequer, although he is still of opinion that such a course would be inconvenient, and that the accuracy of these instruments, after testing, would be very liable to become deranged by removal and subsequent use; and he therefore objects to the authority of Government being attached by a stamp to instruments which in practice might often be found inaccurate, and recommends that the stamp be only affixed to the bell of the gas-measurer, having its scale fixed to the side of the bell, at a place midway between the points of suspension, which scale alone will be the subject of Exchequer attestation.

My lords feel the force of this objection of the Astronomer Royal; but, at the same time, if, as now appears to be the case, the wording of the Act can be so construed as to carry out the operations necessary for testing the accuracy of gas-meters according to the ordinary course of the trade and construction of the terms in use, my lords do not feel justified in declining to act upon that construction, from a fear of inconveniences arising from further consequences for which they are not responsible in terms of the Act, and which, if these provisions are found to be inadequate, may admit of a remedy by fresh legislation. On a review, therefore, of the Act, and having regard to the opinion expressed in the letter from the Board of Trade, my lords are of opinion that gas-measurers of proper capacities may be added to the instruments to be deposited at the office of the Comptroller-General of the Exchequer.

Having regard, however, to the remark of the Astronomer Royal, as to the nature of this instrument, and, in order to make the testing of gas-measurers as accurate as circumstances will permit, my Lords, in accordance with the recommendation of the Astronomer Royal, are pleased to direct that every gas-measurer brought to the Exchequer for verification and stamping, shall have its scale affixed to the side of its bell, at a part of the circumference midway between the two suspending points (if two suspending chains or lines are used), and that the stamping at the Exchequer shall attest both the accuracy and the fixation of that scale. The apparatus, therefore, to be deposited at the Exchequer will consist of the weight, the metallic bottle, the transferrer, and the gas-measurer; and the apparatus which the Comptroller-General will be authorized to stamp, when brought to the Exchequer Office, after verification, will be the weight, the metallic bottle, the transferrer, and the gas-measurer, with the scale fixed as described.

It will be for the justices and town councils to determine for themselves how far it is desirable to procure the weight and the metallic bottle.

The Astronomer Royal, in his report, paragraph 36, seems to consider it unnecessary to do so. But the transferrer and gas-measurer appear indispensable for testing the accuracy of meters.

In sanctioning the stamping of the gas-measurers, my Lords deem it necessary to call attention to the nature of that portion of the apparatus for testing meters, and to the extreme importance of care being taken to prevent any derangement in transmitting the measurer from the Exchequer to the town or place where it is to be fixed; otherwise inaccuracies will arise in the instrument which, equally in the opinion of the Astronomer Royal and the trade, is essential for the testing of meters, for which Her Majesty's Government cannot hold themselves responsible, their functions, under the provisions of the Act, being confined simply to providing and depositing in the Exchequer the standard models therein described, and stamping at the Exchequer copies of such models there ascertained to be correct.

As regards the meters, my Lords desire to call attention to paragraph 37 of the Astronomer Royal's report, from which it appears that it is absolutely necessary that the examination of the counting apparatus be in every instance fully carried out by the inspector, and that the counting apparatus of gas-meters be so arranged as to give all reasonable facilities for such examination, as explained in paragraphs 30 and 37 in the Astronomer Royal's report; and my Lords invite the attention of the manufacturers of gas-meters to the devising of arrangements which will secure this object.

As regards any further measures of control or inspection which may be found necessary to insure the proper working of the Act, my Lords must observe that the responsibility will rest with the local authorities of exercising vigilantly the powers with which they are entrusted by the Act, and, in case those powers should be found insufficient, of bringing the subject under the notice of the Secretary of State for the Home Department, with whom, and not with this department, will properly rest the consideration of any measures of regulation, or of police, which may be thought expedient to prevent frauds and irregularity in the sale of gas.

The meaning of this minute, stripped of its verbiage, is, that "My Lords," guided by the Astronomer Royal's report, consider that they have complied with the requirements of the Act, by having deposited "the weight, metallic bottle, and the instrument sometimes called 'transferrer,'" which they designate the "gasholder;" but, in consideration that the Astronomer Royal has modified his opinion, that another instrument—"the gas-measurer"—might be brought to the Exchequer Office, "My Lords" are therefore of opinion that "the gas-measurer" referred to may be "added to" the instruments required to be deposited.

It had been hoped that the complete exposure of the mistake of the Astronomer Royal as to the nature of the instrument required to be deposited, would have prevented even the Circumlocution Office from repeating the mistake; but, sheltering themselves behind the responsibility of the Astronomer Royal, they simply adopt the recommendations that have been forced on him, in his own form of words. The meter manufacturers having received a copy of the Treasury minute, met again on the 27th ult., partly to protest against the substitution of the new name "gas-measurer" for the well-understood term gasholder; and partly to express their sentiments respecting the rumoured appointment of Mr. George Glover as superintending inspector. Two resolutions and a memorial were agreed to at the meeting, and copies of them were sent to the Lords of the Treasury as under:—

To the Lords Commissioners of Her Majesty's Treasury.

Radley's Hotel, Bridge Street, March 28, 1860.

My Lords,—Enclosed I have the honour to hand to your lordships copies of two minutes passed at the general meeting of the gas-meter manufacturers of Great Britain, held yesterday, at the above address; also the original memorialre ferred to in one of them, and signed by every firm in the trade then present.—I have the honour to be, my Lords, your lordships' most obedient, humble servant,

ROBERT BEVERLEY.

Radley's Hotel, Bridge Street, Blackfriars, March 27, 1860.

At a general meeting of the gas-meter manufacturers of Great Britain, convened by circular, and held this day at the above address, it was moved by Mr. Defries, Jun., seconded by Mr. Hartley, and carried unanimously, upon the reading of the "Sale of Gas Act. Treasury minute, dated March 24, 1860"—

"That it is the opinion of this meeting that it would prevent a great amount of misconception, erroneous orders, and unnecessary expense, if it would suit the convenience of the Astronomer Royal, the Comptroller-General of the Exchequer, the Lords of the Treasury, the President of the Board of Trade, and the Secretary of State for the Home Department, in all documents and correspondence, to call the instrument to be used for testing meters a "gasholder," as in the Act, and as is usual with all persons connected with gas affairs, instead of "gas-measurer," as the Astronomer Royal now calls it, and that a copy of this minute be sent to each of the above departments of the Government."

Moved by Mr. Defries, seconded by Mr. Ford, and carried unanimously—

"That the memorial to the Lords of the Treasury, with reference to Mr. G. Glover, be handed to their lordships by a deputation from the committee of the meetings at the earliest possible day, and that copies of the same be sent through the post to the Comptroller-General of the Exchequer, the President of the Board of Trade, the Secretary of State for the Home Department, and the Astronomer Royal."

Radley's Hotel, London, March 27, 1860.

Memorial to the Lords Commissioners of Her Majesty's Treasury, from the Manufacturers of Gas-Meters in Great Britain now assembled, at a General Meeting at the above address,

Showeth,—That in an article in the JOURNAL OF GAS LIGHTING of this date, and headed "Circular to Gas Companies," allusion is made to Mr. George Glover, the brother of Mr. Thomas Glover, meter-manufacturer, having by some means contrived to gain the ear of certain persons in office, who have recommended him as a fitting person to fill the not yet created appointment, and which article then goes on to state some of the antecedents

of Mr. George Glover, in reference to his qualifications, or *non*-qualifications for the office sought by him to fill.

We, the undersigned, beg to submit, for your lordships' consideration, the propriety or otherwise of appointing or not any person or persons connected either directly or indirectly with the gas-meter trade.

As Mr. George Glover has recently been agent (as this meeting is given to understand) to his brother, for the sale of his gas-meters in Manchester, or otherwise connected with him, and has actually come to this meeting to represent his brother, we feel that there is no doubt as to the connexion between the two, notwithstanding that he has declared, in the presence of several of the committee this day assembled, that he has no idea of applying for any appointment under the Act, and that the impression that has been created out of doors on the subject is entirely a misconception.

ROBERT BEVERLEY, of Leeds, Chairman.
C. R. MEAD, of London,
W. SMITH, of London.
J. VICKARY, of Exeter.
N. DEFRIES and SON, of London.
D. HULETT, of London.
W. CROSLEY, of London.
W. PARKINSON and Co., of London.
J. BOULTON, of London.
J. BENT and SON, of Birmingham.
CROLL, RAIT, and Co., of London.
W. HUNTER, for Milne and Son, of Edinburgh.
A. WRIGHT, per F. W. Hartley, of London.
PADDON and FORD, of London.
J. MEACOCK, of London.
G. SHEARMAN, of London.
J. DRAPER, for J. Roper, of Wigan, Lancashire.

Duplicates were also sent to the Home Secretary, to the President of the Board of Trade, to the Comptroller-General of the Exchequer, and to the Astronomer Royal. The Home Office acknowledged the receipt of the resolutions in the usual official form; the Comptroller-General sent a separate acknowledgment of each; and there were two replies, also, from the Astronomer Royal, which deserve especial consideration; the Lords of the Treasury and the Board of Trade have not yet responded. The notes of the Comptroller-General of the Exchequer are worthy of being quoted, for, though they contain little information, they are sensible and to the point, and fall gratefully on the ear, after the ordinary stereotyped official phraseology:—

Whitehall, March 31, 1860.

Sir,—I am directed by Secretary Sir George Lewis, to acknowledge the receipt of your letter of the 28th inst., enclosing copies of two minutes passed at the general meeting of the gas-meter manufacturers of Great Britain, held on the 27th inst. at Radley's Hotel, Bridge Street, Blackfriars, together with a copy of the memorial referred to in one of the minutes.—I am, Sir, your obedient servant, H. WADDINGTON.

Mr. Robert Beverley, of Leeds, Radley's Hotel,
Bridge Street, Blackfriars.

Exchequer, March 29, 1860.

Sir,—I have received your letter of the 27th and its enclosures this morning.

I have no authority to alter the designation given by the Sale of Gas Act and the Treasury to any of the apparatus deposited with me.

My functions under the Act are simply executive, and must originate with the Treasury.

At the present time, those functions are limited to comparing with the standards deposited here copies of the following instruments:—

1, The weight of 62.321 lbs.;
2, The measure containing 1 cubic foot; and
3, The gasholder adapted to give successive discharges of one cubic foot of air.

These instruments have been all verified and sanctioned by the Treasury, and copies of them sent in by the local authorities named in the Act can at once be compared, verified, and sealed, when found to be accurate.

I have, however, received a minute of the Board of Treasury, dated 24th inst., intimating that further instruments called gas-measurers are intended to be deposited here, with the necessary instructions required for their use and verification. Neither the instruments nor the instructions have as yet reached me, but no delay shall take place in this department to give effect to the directions of the Treasury, when received.—I am, Sir, your obedient humble servant, MONTEAGLE, Comptroller-General.

Robert Beverley, Esq., Radley's Hotel,
Bridge Street, Blackfriars.

Exchequer, March 29, 1860.

Sir,—I beg to acknowledge the receipt of a resolution adopted at a meeting of manufacturers of gas-meters, respecting Mr. George Glover, enclosing the copy of a memorial to the Lords of the Treasury, dated the 27th inst.

The appointment of officers in this department rests exclusively with the Treasury, and not with me.—I am, Sir, your very obedient servant,
MONTEAGLE, Comptroller-General.

Robert Beverley, Esq., Radley's Hotel,
Bridge Street, Blackfriars.

We now approach the replies of the Astronomer Royal, and we confess we do so with feelings of considerable pain. Both his letters are of the same date, but we refer, more especially, at present, to the one wherein he acknowledges having received a copy of the memorial of the gas-meter manufacturers respecting the rumoured appointment of Mr. George Glover.

In that memorial, it will be borne in mind, that it is distinctly stated that Mr. George Glover had presented himself at a meeting of the committee of meter-manufacturers as his brother's representative, and that, till a recent period, he had acted as his brother's agent, for the sale of meters. There can be no doubt, therefore, that the Astronomer Royal was fully possessed of the fact of Mr. G. Glover's intimate relation with the trade. Of the unfitness of such a person to hold office in carrying out the Sale of Gas Act, the Astronomer Royal thus strongly expresses himself:—

Royal Observatory, Greenwich, London, S.E., March 29, 1860.

Sir,—I have the honour to acknowledge your letter of the 28th, inclosing copy of a memorial from gas-meter manufacturers to the Lords Commissioners of Her Majesty's Treasury, regarding the objections which might exist to the appointment by the Government of Mr. George Glover to any office connected with the superintendence of gas-meter inspection.

I am much obliged by the courtesy of yourself, and the assembled gas-meter manufacturers, in transmitting this document for my information.

You are doubtless aware that, by the understood rules in offices of Government, no step could be taken by me in making any recommendation, unless I were specially requested to do so.

I am not fully possessed of the intentions of Government, either as to the appointment (in any case) of a superintendent of gas-meter inspection, or as to the selection of a person.

On the correctness of the general principle, that no person should be appointed who is closely connected with the manufacture of gas apparatus (which principle, as applied to meter inspectors, is very fully expressed in the Gas Measure Act) there can be no doubt.—I have the honour to be, Sir, your obedient servant, G. B. AIRY.

Robert Beverley, Esq.,
Chairman of the Meeting of Gas-Meter Manufacturers.

The foregoing letter, it will be observed, was dated on Friday, March 30, and it will scarcely be credited that, within a few days, Mr. George Glover was appointed by the Astronomer Royal to be his assistant for the verification of gas-measurers!

We look again and again at the letter, to see if by any possible construction it can be taken to mean otherwise than that the writer was neither authorized to make any appointment, nor was aware of the intentions of Government that such an officer would be appointed. But we look in vain. Is it that the Astronomer Royal is already so accustomed to play fast and loose with words, that he thinks he may venture to make the public accept terms having usually one signification, as signifying exactly opposite? The only supposition that seems capable of explaining such a change is, that the Astronomer Royal had been especially requested to appoint such an officer. But, even in that case, the appointment of Mr. George Glover would be in direct opposition to what is admitted to be correct principles in guiding appointments under the Sale of Gas Act. There is one thing, at all events, quite clear from this proceeding, and which no tortuous language, no acceptance of one term for another, can mystify; and it is, that the highly respectable body of gas-meter manufacturers of the kingdom have been deceived and insulted, and where policy, if not fair dealing, would have dictated conciliation, their wishes have been set at nought and derided.

The second letter of the Astronomer Royal is occupied entirely with the defence of his new term, "gas-measurer," applied to gasholders. He very courteously argues with the gas-meter manufacturers that the latter term is bad, and he strongly recommends this as a fitting opportunity for the adoption of more precise language in gas apparatus. The letter, however, will sufficiently explain its object and unfold its arguments.

Royal Observatory, Greenwich, London, S.E., March 29, 1860.

Sir,—I have the honour to acknowledge your letter of the 28th, inclosing (with other documents) copy of a resolution of a general meeting of the Gas Meter Manufacturers of Great Britain, addressed to several principal officers of Her Majesty's Government, and to myself, regarding the proposed use of the name "Gas-measurer," instead of "Gasholder," for the instrument used in testing the capacity of gas-meters. In acknowledging the moderation and courtesy of the language of this resolution, I ask leave, at the same time, to lay before the gas-meter manufacturers some considerations which may perhaps be worthy of their attention.

First, I remark that there is now no question as to practical action. The general course of gas-meter verification is arranged, I trust, in a way which is, on the whole, satisfactory to all parties, and the question is merely one of a name.

Next, I would observe that there is no point of honour concerned, either on the part of gas-meter manufacturers, in retaining the name which they have lately used, or on the part of myself, and other representatives of the Government, in continuing to urge the adoption of the new name. It is possible that we look at the meter from points of view slightly different; that the manufacturers are struck by the present inconvenience of change of a name, and the representatives of the Government feel strongly the importance of making language precise and unequivocal.

Thirdly, I would remark that the number of persons concerned in the manufacture and immediate use of these instruments, though absolutely large, is relatively, and in proportion to the population of the country, exceedingly small. Moreover, these persons possess those powers of communication among themselves which are usually possessed by persons employed in one trade or profession; they have in common circulation an excellent GAS JOURNAL, and from this tacit organization, and rapid communication, there can be little doubt that they could, by a single paragraph, change the custom of manufacturers' language, if they were satisfied that better language could be found. I am confident, therefore, that the gas-meter manufacturers will recognize that they have the power, and therefore, to a certain degree, the responsibility of using precise language, and that the question is, therefore, simply one of correctness and precision of terms.

I now express my opinion that the term "Gasholder" is radically bad, and

likely to introduce confusion, firstly, because the name is already attached to another instrument, which it correctly describes; secondly, because it does not accurately describe the instrument used for testing gas-meters.

In regard to the first objection, if I go into a gas company's yard, and see the large vessels there charged with gas, I at once recognize the propriety of the name "gasholder," inasmuch as these vessels do hold gas. If I then go into the testing-room, and see an instrument which is not used for holding gas, in which, probably, there never was any gas, I protest against using the same term for it which was correctly applied to the other.

In regard to the second objection, the term "holder" does not at all describe the function of the instrument. It is truly and correctly a "measurer," and nothing else.

The term "gas-measurer," so far as I know, is not at present attached to any other instrument. It describes, with the utmost precision, the office of the instrument under consideration. I do, therefore, again suggest to the gas-meter manufacturers the great advantage of at once adopting this name.

I need not point out to the manufacturers, that the present time is a critical one for the language to be hereafter adopted in their profession. It is now in their power to make a change with ease, which hereafter can only be made with difficulty. It is now in their power to expel an ambiguous and inapplicable name, and to substitute for it one which is free from ambiguity and strictly applicable. Much confusion (of which, I regret to observe, the consequences have fallen principally upon the gas-meter manufacturers) has already risen from the use of ambiguous and unprecise words; and every effort, ought, I think, to be made for preventing the recurrence of such a misfortune.

I request that you will communicate these remarks to the manufacturers of gas-meters in any way which you may judge best.—I have the honour to be, Sir, your obedient servant, G. B. Airy.

We fully agree with the Astronomer Royal that the term gasholder fails to describe all the objects and purposes of the instrument. There can be no question that it was derived from the larger vessels used simply for storing gas. There has, indeed, been a strange perversion in the use of terms to express the vessels for merely storing gas, and those for storing and measuring it. In the early years of gaslighting, and even in many parts of the kingdom at the present time, storing vessels were called "gasometers," the name being derived from the instruments employed by chemists, to collect and measure the quantity of any gas generated by them in the laboratory. As the suspended inverted cover indicated by its elevation the quantity of gas contained, the term was not misapplied, but gradually, in large gas-works, the storing capacity alone was regarded, and the instruments were called gasholders, or stores of gas for use.

A similar change of name was given to the smaller instruments used by meter manufacturers for collecting gas from the mains, and for testing the quantity passed through the measuring instruments. This apparatus though much more delicately and accurately constructed, with the addition of an index, was in principle a counterpart of the larger vessels, and the general term gasholder was applied also to them; and the original name gasometer slipped out of use in all large towns. But the Astronomer Royal may still find gasholders called gasometers in many of the provincial towns in the kingdom, and in other places his notions of precise language might be shocked by hearing them called "ometers" or by other sounds approaching thereto. The instruments which all meter manufacturers in the kingdom, however, have long known as gasholders are not merely gas-measurers, as the Astronomer Royal supposes. They answer the purpose in the first instance of holding or storing the gas collected, to be subjected experimentally for the purpose of ascertaining the regularity of action of gas-meters—the real gas-measurer. The displacement of the quantity of gas indicated by the descent of the bell, affords a convenient means, when proper indices are provided, of ascertaining the volume of gas displaced; and, for this purpose, therefore, it has been generally employed as a test of the quantity passed by meters during a given number of revolutions. If greater precision of language were required, it might be desirable to call the instrument a "testing gasholder"; but it is so well known by its general name that the distinction might seem more pedantic than practical.

Though we fully agree with the Astronomer Royal in the opinion, that the small instrument used for testing gas-meters is different in many respects from the large vessels used merely for storing gas, we cannot agree with him in thinking they they are not similar. The smaller as well as the larger instrument, as commonly used for holding gas, and the very similarity of form and construction, has given rise, as we have already shown, to the application of the same name. By calling it a "testing" gasholder, the utmost precision of language would be attained, if greater precision were required. The new term "gas-measurer" would, on the contrary, not indicate the actions of the instrument, which alters the pressure, as well as measures gas; and the claim to the term might be disputed by the gas-meter, which is the true measuring instrument for all practical purposes. The substitution of the term "gas-measurer" for gasholder would, therefore, tend to introduce confusion, instead of adding to the preciseness of language.

If it be undesirable to use the same term for two different instruments, how does the Astronomer Royal propose to reconcile the monstrous incongruity of applying the term gasholder to the transferring instrument which he has deposited at the Exchequer Office? There is not the slightest resemblance in appearance; there is no similarity in object; and there is a vast difference in the size of the two instruments; and yet we find the Astronomer Royal, who professes to be so careful to prevent the confusion of terms, declaring that the small rigid metal case, which has not the slightest pretension to be called a gasholder, must be so called to make the ridiculous deposit agree—at least in name—with the instrument required by Act of Parliament. There was no confusion of terms in gas apparatus until it was introduced by the Astronomer Royal in his endeavours to substitute one thing for another by calling it the same name; and we do not think it likely that the meter manufacturers of the kingdom will be cajoled, by his arguments, to depart from the use of well recognized terms to indulge his crotchets. They will not fail, also, to read the arguments in one letter by the right thrown on them by the other; and will reasonably hesitate to follow, in the adoption of new terms, an untrustworthy guide, who has shown them that language can be used as a delusion and a snare.

The duty of the gas-meter manufacturers lies plain before them. There has been already too much quibbling and delay, and a clearer case of evasion to comply with the provisions of an Act of Parliament could not occur. The manufacturers should stand firm, and, if need be, apply to the Queen's Bench for a *mandamus* to compel the Treasury to lodge models of such gasholders as can be used in testing meters. They would be sure to carry their point, and they would thus extricate themselves from the mazes of the Circumlocution Office.*

Our character as a practical people has suffered greatly, in the eyes of foreign nations, by this controversy. Our contemporary, "*Le Gaz*," in its last number, after giving an abbreviation of the Astronomer Royal's report, thus alludes to the subject:—

Such is, in substance, the report of Mr. G. B. Airy, the Astronomer Royal of Great Britain. Without detracting from the personal merit of the reporter, we must state frankly our belief that it would have been preferable to have chosen a practical man) or, at least, to have named a commission of practical men) who, instead of amusing himself by removing a supposed grammatical blunder; instead of re-naming and re-baptising instruments, the names of which are known to all; instead of confusing the word *balance* with a pair of scales, he had given it the application indicated by the law; instead, in short, of having arrived at the conclusion prescribed by the third section of the law for the deposition of the necessary models, without having done anything more than attempted to show the necessity of revising the law, which really is sufficiently clear and precise to be carried into practical operation, it would have been far better if a few sittings of such a commission had determined what were the nature of instruments necessary for testing gas-meters

Circular to Gas Companies.

Sir John Shelley's Bill for better Regulating the Supply of Gas to the Metropolis has been read a second time in the House of Commons, and will be found *in extenso* in another part of our Journal. The gas companies have thrown no objection to the introduction of the bill, or to its passing the standing orders of the House, thinking it best that the much vexed question should be settled by Parliament as quickly as possible.

The bill exhibits no compromising character, but it declares broadly all the requirements that the delegates think necessary to render the supply of gas to the metropolis suitable to their views, without respect to the justice of the claims of the companies. The preamble of the bill has, however, been drawn so as to present as little objection as possible on general principles. The correctness of the principle and the advantages derived from the districting arrangements, are expressly admitted, and the main objects of the bill are stated to be to receive the sanction of Parliament for such districting, and to make provision "for the due regulation of all companies and persons supplying gas within the metropolis with respect to matters in which the consumers of gas are interested." The preamble is, nevertheless, objectionable, as it includes among the metropolitan companies several that are strictly suburban, such as the Wandsworth and Putney Company; the Woolwich, Plum-

* Since the above was in type, an intimation has been received from the Treasury by the chairman of the Meter-Manufacturers' Association, to the effect that, for the future, the term gasholder will be adopted, instead of gas-measurer, and that bells, with the scales attached, will be stamped at the Exchequer.

stead, and Charlton Consumers' Company; the Woolwich Equitable Company, the Brentford Company, and the Victoria Docks Gas Company. The Crystal Palace District Gas Company, which was included in the last bill, has been withdrawn from the present one, and the original Woolwich Gas Company, though retained in the bill, has long since become extinct. As regards Woolwich, indeed, the statements in the preamble are incorrect, for the companies, instead of having agreed, "as far as possible each one to confine his supply to a separate district," are in active competition. These corrections being made, to which there will be little objection, the preamble of the bill will, we presume, not be disputed.

Respecting many of the clauses of the bill also, we do not anticipate there will be much debate. Twenty-four out of its fifty clauses are similar, and many of them are *verbatim* copies of the clauses proposed by the opponents of the Dover Gas Bill, every one of which was rejected by the Dover committee; and none of them are likely to find more favour with the committee on a metropolitan gas bill. The main points, indeed, on which any serious struggle will arise are the questions of the illuminating power of the gas, its maximum price, and minimum pressure; and to those the principal efforts of the contending parties will be directed.

Petitions against the bill will, of course, be presented by all the companies affected by it, and we have now before us a copy of that of the Phœnix Gas Company. It sets forth in a strong light the injustice of the attempt to interfere with the management of the affairs of an old established gas company, to throw obstacles in their way of conducting business, and to diminish the profit which they may reasonably expect to derive from their undertaking. The petition states the peculiar difficulties that attended the establishment of the Phœnix Gas Company: it mentions the well-recognized advantages and conveniences which the public have derived from their labours, and asserts that there has been no well-grounded complaint against their mode of conducting business. Among other points adverted to, are the reductions already made in price, from 15s. to 4s. 6d. per 1000 feet, the arbitrary assessment of their mains to parochial rates, the advance that has recently taken place in the wages of workmen, in the prices of coals, and other materials, the possible effects of the introduction of new inventions in deteriorating the value of their property; and, after stating generally the claims which an old established gas company possesses to the consideration of the public, it proceeds to notice those parts of the bill that are regarded as most objectionable. The bill, the petition avers, is full of vexatious interference with the freedom of trade; and references are particularly made to the injustice of fixing a maximum price for gas, whilst the cost of materials is continually fluctuating; to the high illuminating power required, as being greater than can be permanently produced from ordinary coals, and to the fact that the maximum price of 4s. for such gas would not leave a reasonable profit, at the present cost of labour and materials, and that the loss would be increased by maintaining a constant pressure. The petitioners complain that by the bill they would be compelled to supply rural districts, eight or ten miles distant from the Royal Exchange, on the same terms as densely-populated neighbourhoods; that it is proposed to fix heavy penalties on accidents over which the company can have no control; to give the police magistrates arbitrary power over their property, works, and mains; to enforce the continuance of the supply until after one month's notice, even though the consumer should have been convicted of stealing the gas; to compel them to lay down mains without securing any adequate return; to empower vestries and district boards to light and extinguish the public lamps, without any security to the company against waste; and to enable a police magistrate to call for all the books, papers, and writings of the company, and thus to reveal all their internal affairs. The petitioners affirm that private consumers are perfectly satisfied with the supply of gas; that a large number of vestries and district boards are likewise quite satisfied with the supply and price charged for the public lamps; and that those vestries and district boards who have applied as petitioners in favour of the bill, "have only done so at the solicitation of a few persons who are agitating this question, and your petitioners are informed that these persons expect to derive a very handsome remuneration for their supposed services under the last enabling clause of the proposed bill, for payment of the expenses thereof." The petitioners, therefore, in conclusion, pray to be heard by counsel against the bill, for the purpose of proving that the allegations and complaints in the preamble are untrue, and that the clauses contained in the bill are uncalled for and unnecessary for the protection of the public, and that they are subversive of the interests, rights, and privileges granted to the petitioners, upon the security and faith of which they have expended their capital.

The committee will no doubt be appointed shortly after the re-assembling of Parliament; and there is, therefore, a fair prospect that the question which has for three years past occasioned so much ill-feeling and dissatisfaction, will be soon finally settled, and that Mr. Hughes's plausible statistics will be made to totter and finally disappear before the strong light of truth.

We are informed that the "New Artificial Gas" alluded to in a recent number of the *Photographic News*, relates to the invention of a M. Isoard of Paris, for which an English patent was taken out on November 2, 1857. The invention formed the subject of a paper read by the Abbé Moigno, at the last meeting of the British Association held at Aberdeen, and it has been since described by him in eulogistic terms in the "Cosmos." The inventor thus describes his system in his specification:—

My invention relates to carburetting and burning the vapour of water, in order to render it applicable for heating and lighting purposes. I produce the vapour in any kind of generator, or it may be the steam as it leaves the cylinder of steam-engines. I cause this vapour or steam to be superheated, and to traverse in a carburetting apparatus, in which it is charged with gaseous hydro-carbon, which it carries away. On leaving this apparatus, it is passed under the bars of a furnace, in which it serves as fuel. The vapour of hydro-carburet burns, and the steam arising from water also burns after having been decomposed into hydrogen and oxygen.

Instead of conducting it under a fire-grate, it may be conducted into a gasholder, whence it can be allowed to escape at pleasure, and burnt like gas used for lighting purposes.

I vary the preparation of the hydro-carburets to be used, according to the purpose required. For steam intended to serve as fuel, I use heavy tars of all kinds; and, for gas for lighting purposes, I use hydro-carburets. Thus, the steam leaving a boiler or generator of any kind, even after it has been used for producing the action of an apparatus, is passed through a worm, heater, or any other suitable apparatus, in which it is superheated to a high temperature, and then caused to enter a carburetting apparatus.

The claim is for

Carburetting superheated steam, effected by causing the superheated steam to traverse hydro-carburets of any kind; this carburetting furnishing, according to the mode of operating and the carburets employed, gas for lighting or for heating purposes.

The term "Steam gas," expresses popularly the nature of the invention, but it is of course quite clear that both the steam and hydro-carburets will become liquids, when the temperature descends below the points necessary to maintain them in the state of vapour, and hence M. Isoard's "steam gas" will neither bear stowing in gasholders nor distribution through mains. It must be used as fast as generated, before the superheated steam has had time to condense, or the hydrocarbon vapours have acquired the temperature at which they return to their liquid state. The scheme has been for 18 months before the public, and no practical man has been found to endorse its feasibility.

The Universal Lime Light Company announce that they have "concluded arrangements for the purchase of Bassett's and other patents for the production of oxygen as well as hydrogen, and carburetted hydrogen gases, which can be manufactured at a price hitherto unattainable." We find on searching the records of the Patent Office, that Mr. John Allen Bassett, of Salem, Massachusetts, United States, applied on the 27th of February last, for two patents: the one for "Improvements in apparatus for decomposing steam," and the other for "Improvements in the manufacture of gas for illuminating and other purposes." These specifications are not due till August next, but from the reports of the American Patent Office, it appears that a patent with the same title as the first of the English patents was taken out in January last, and its claim is stated to be "the employment of a retort furnished with a hollow pipe in the axis of the retort, perforated in the manner set forth, the whole operating in the way and for the purpose described." Our readers must for the present be content with this meagre description which, however indicates the direction in which the ideas of the inventor are turned.

Correspondence.

THE ASTRONOMER ROYAL'S CUBIC FOOT BOTTLE.

SIR,—In reply to a letter from Mr. E. W. Ladd, in your JOURNAL of the 27th inst., relative to some remarks made by H. B. Sheridan, Esq., M.P., who accompanied the deputation of the gas-

meter manufacturers to the Treasury on the 9th inst., and having been myself one of the deputation, I have to observe that the remarks then made by Mr. Sheridan are substantially correct; and, further, the brazier who made the bottles for Mr. Ladd did adjust them to the fractional part of a cubic inch. There is no great art in this, as any brazier, who is in the habit of making copper spirit measures from five gallons down to half a pint, which must of necessity be accurate before they are sent to the inspector to be stamped, could readily and easily do.

I did not understand Mr. Sheridan to imply that Mr. E. W. Ladd was not competent, but that the bottle was not actually made by him, and could have been obtained at a much less price direct from the maker.

The Astronomer Royal admits in his report, of Feb. 11, 1860, paragraph 6, that the cubic foot transferrer, invented by Mr. King, and manufactured by Mr. W. Crosley, but which he (the Astronomer Royal), for reasons (see par. 9 of his report) most fallaciously calls a gasholder, "is an instrument of excellent workmanship," and which instrument (see par. 7) "was found to be perfectly correct," and (see par. 8) "deposited in the Exchequer office in strict accordance with the spirit of the Act"; and this instrument, having been in use long before the passing of the Sale of Gas Act, a query naturally arises as to what is the meaning of the words (see par. 6) —"I have caused to be prepared, by Messrs. E. W. Ladd and Co., a metallic vessel or bottle intended to contain one cubic foot, constructed of tinned copper in shape of a cylinder, with a cone at each end—the upper one having a small cylindrical neck for the introduction of water, and the lower cone having a tap for its discharge," which is merely a copy of the upper vessel of Mr. King's transferrer in all its details.

For what reason is it that the Astronomer Royal has had the upper part or chamber of Mr. King's instrument made and deposited in the Exchequer—in duplicate—while the original form of instrument is so much more compact and serviceable? it being impossible to conceive for what purpose it could be intended, except indeed to multiply useless instruments? Mr. Ladd, who sells these bottles, might probably answer this question.

You are aware that the deputation from the general meeting of the gas-meter manufacturers of Great Britain, who waited upon the Lords of the Treasury on the 9th inst., and upon the Board of Trade on the following day, did not receive a reply until the 27th inst. when the Treasury Minute dated the 24th ult. was handed to them.

In concluding these few remarks, I cannot but express my surprise that on the very next day (28th inst.) after the receipt of the Treasury Minute, in which is admitted the necessity of having a gas-measurer (a real gasholder), a lithographed circular, with drawings of a new form of transferrer and the so-called gas-measurer, was issued by Messrs. E. W. Ladd and Co., in which drawing both the cubic foot bottle and the air-chamber of the transferrer are exposed, and are consequently liable to be damaged. When, or at whose suggestion the drawings were prepared, Mr. Ladd best knows; for it must be evident to all disinterested parties that, throughout the whole of this protracted and vexatious dispute, the gas-meter manufacturers, though put to great expense and inconvenience by the misconception of some of the provisions of the Act of Parliament, have been actuated by a sincere desire honestly to carry out the intentions of the Legislature; but they feel that their good intentions have been in a great measure thwarted by causes they could not control.

ROBERT BEVERLEY.

Leeds, March 30, 1860.

MR. GEO. GLOVER'S QUALIFICATIONS FOR OFFICIAL EMPLOYMENT.

SIR,—My attention has been called to an article in your last number, in which a most gratuitous and unwarrantable liberty is taken with my name. It is anything but a pleasing duty to write about one's self, especially in a self-congratulatory tone, but the disagreeable necessity is forced upon me.

Referring to the report of the Astronomer Royal, which recommends the appointment of a scientific gentleman to assist in the administration of the "Sale of Gas Act," the writer asserts that I "have contrived to gain the ear of certain persons in office, who have recommended me as a fitting person to fill the not yet created appointment." He designates me, "Mr. George Glover, or, as he is sometimes called, Dr. Glover;" and he then informs your readers that, "five or six years since, I was surgeon to the police force in Edinburgh; that I came into collision with the Lord Provost; and that my retirement was the consequence."

The insidious character of this attack is sufficiently obvious. More is meant than is expressed. It is quite true, Sir, that, among other public duties I had to perform when residing in Edinburgh, I acted as surgeon of police. It is also true, that I had the misfortune to differ in opinion from the Lord Provost upon certain points connected with the drainage of the city. But it is not less true, that that part of the plan for intercepting the sewerage of the New Town of Edinburgh to which I had objected, and for which an Act of Parliament was obtained, was found impracticable, and it never has been executed. An expedient, moreover, in accordance with my views, was carried into effect, and it has been attended with great advantages.

I plead "guilty" to the charge of being a Member of the Royal College of Surgeons, Edinburgh. In connexion with that college, I lectured, for many years, on mechanical and experimental philosophy. Those lectures, though designed mainly for the students in the college, were frequently attended by some of the most distinguished men in the city, from whose correspondence it may be enough to submit one or two extracts. Lord Murray was pleased to say, "Having heard some of Mr. Glover's lectures, I may venture to state that he possesses great talents as a lecturer, seems always perfectly master of his subject, and states his views with great clearness and ability." And the presidents of the college, Sir G. Ballingall and Dr. John Campbell, thus write of me:—"Mr. George Glover is well known to us as a gentleman of distinguished merit, high scientific attainments, and varied and profound knowledge in the departments of mathematics and natural philosophy. Having attended a good many of Mr. Glover's lectures, and also witnessed his public demonstrations at the meetings of scientific societies here, we were very strongly impressed with his unusual facility and power in communicating knowledge to others." As a teacher of mechanical philosophy, I could, were it necessary, appeal with confidence to hundreds of my quondam pupils, many of whom now fill prominent positions in the different professions.

In connection with my class, I had a large museum of mechanical apparatus, and was familiar with their mechanism and use. As a member of the Royal Society of Arts, of which I had the honour to be chosen one of the vice-presidents, I took an active interest in its business, was often nominated convener of its committees, appointed to examine and report on the mechanical inventions and improvements submitted to the society.

On my connexion with the Edinburgh police ceasing, I received a letter from Dr. Sutherland, of which the following is an extract:—

SIR,—I am directed by Sir Benjamin Hall to ask if you will undertake the office of inspector of any parish or district of the metropolis? I am to state that the remuneration proposed is at the rate of three guineas a day. If you are willing to act, will you be so good as to intimate your acceptance? I am, Sir, your obedient servant,

(Signed) JOHN SUTHERLAND.

The General Board of Health, Whitehall, Sept. 1, 1854.

I accepted the appointment, and, among other duties, I was directed by Sir Benjamin Hall (now Lord Llanover) to examine and report on the gas-works of the metropolis, for his information and guidance in connexion with clauses in the "Nuisances' Removal Act, 1855." And in a letter I have from his lordship he is pleased to say:

"You were also specially employed by me to report on the gas-works of the metropolis in connexion with clauses in the Nuisances' Removal Act of 1855, relating to noxious trades. I had every reason to be satisfied with your performance of those special duties during the time that I held the office of President of the General Board of Health.

I am, dear Sir, yours faithfully,

(Signed) BENJAMIN HALL.

In 1855, when the disasters occurred in the Crimea, I was recommended, altogether without my knowledge, to be sent to the seat of war as one of the sanitary commission; and, when Dr. Gavin was killed, I was, on Lord Shaftesbury's recommendation, appointed to act as colleague to Dr. Sutherland—an appointment which a sudden illness prevented me implementing.

GEO. GLOVER.

8, *Queen Square, Westminster, April* 5, 1860.

[The writer abstains from all allusion to his intimate connexion with his brother, Mr. Thomas Glover. It is notorious that, so late as the 27th ult., Mr. George Glover presented himself as his brother's representative at a meeting of the committee of the Gas-Meter Manufacturers' Association, and this proof of their connexion must, we apprehend, disqualify him from holding any office under the Sale of Gas Act.—ED. J. G. L.]

Register of New Patents.

2121.—SAMUEL NEWMAN RODIER, of Prospect Cottage, Strand-on-the-Green, Chiswick, Middlesex, for "*Improvements in the regulation of gas to burners, which he calls 'Rodier's regulating gas valve.'*" Patent dated Sept. 17, 1859.

This invention consists in constructing a gas-valve by the use of a rising and falling inverted cup, arranged so that the higher it is lifted by the pressure of gas, its lower edge comes nearer and nearer to a collar or ring attached to, or formed on, and projecting over, the outside of the supply-pipe; and also, in attaching a holder for glass, or other shade, at the junction of the parts of the outer case.

2136.—JOHN COURT, of Brompton Row, London, for "*Improvements applicable to gas and other lamps and lights, and also gas stoves, for effecting more complete combustion therein.*" Patent dated Sept. 20, 1859.

This invention has for its object the more complete combustion of gas, and other agents used for illuminating purposes. To effect this, a ring is formed of metal, suitable to fit on the top of a chimney or glass of a lamp, portions of the opening of which said ring are filled with a woven or plaited material, or vegetable substance known as asbestos, or shreds or filaments of the same are bound on small rods, fixed across the said ring, thus forming and adapting a cap or cover over the flame, the effect of which as follows:—the asbestos becomes red-hot, the caloric is increased

in the glass of the lamp or fire-place of the stove, as the case may be, more perfect combustion ensues, the flame is improved and smoke prevented.

The claim is for placing a cap or cover of asbestos over the flame of a lamp or gas stove, for the purposes set forth.

2157.—JOHN DALES, of 11 and 12, Gresham House, Old Broad Street, London, for "*Improvements in purifying sewerage, and other impure waters, and in separating therefrom materials suitable for use as manure, and also the preparation of a substance to be employed for such purposes.*" Patent dated, Sept. 22, 1859.

By the term purifying, in reference to this patent, is meant not only the destruction or separation of those chemical compounds generated during putrefaction, and which are offensive to the sense of smell, and those which emanate during putrefaction and either engender disease or confer a fatal character upon that already existing, but also the precipitation of the phosphoric acid and certain organic compounds, which, if unremoved, will re-establish the putrefactive process, and reproduce the previous condition, alike offensive, and dangerous to health. Thus, by this invention, not only is the sewerage and impure water disinfected and deodorized for the present, but a permanency of effect hitherto unattained is produced.

For the purpose of carrying out this invention, a material is first employed, to which the patentee has applied the name of magneto-chloride of iron, and which is prepared by dissolving in muriatic acid, by any of the ordinary processes of solution familiar to chemists, magnetic oxide of iron, or any of the ferruginous products from various metallurgic processes and manufactures which are magnetic, or will furnish, when dissolved in muriatic acid, a solution which, when diluted, and mixed with solutions of ferro cyanide and ferrid-cyanide of potassium, will produce in each case, a blue precipitate.

It is advisable to use the muriatic acid, in the concentrated form in which it is usually found in commerce, as the solution of the oxide is more readily effected under that condition, and the acid is nearly saturated, so that there is but little free acid—not more than one or two ounces in a gallon.

If, when the acid is saturated, the fluid has, when cooled to 60° Fahr., a specific gravity of 1450 or thereabouts, it will contain about one pound of iron in the gallon, and is then in the condition which is preferred for carrying out the objects of this invention. If however the density is less than 1450, then the solution must be concentrated until that density is attained.

By careful evaporation, the magneto-chloride may be obtained in the solid form, and then it can be dissolved in water until a solution of the above density, or thereabouts, is obtained. It must be distinctly understood, that the patentee does not confine himself to the employment of a solution of the magneto-chloride of iron of the specific gravity of 1450, but that he prefers it.

Secondly, a compound is employed which the patentee calls chloride of manganese, and which is prepared by dissolving in muriatic acid any of the commercial oxides of manganese, which all contain more or less iron, until the acid is nearly saturated. The process of solution is similar to that ordinarily adopted by manufacturers for the production of chlorine, and the solution so obtained is concentrated until the fluid has a density of 1450 or thereabouts. For the purpose of this invention, this is employed either alone, or by preference mixed with an equal volume of solution of perchloride of iron of like density.

For the purification of sewerage and other impure waters, the patentee proceeds as follows, but it must be distinctly understood that the quantities of his disinfectants necessarily vary with the degree of decomposition and foulness of the water operated upon. In order to disinfect and deodorize sewerage, and stay the putrefactive process, there is added to every million gallons, from 30 to 70 gallons of either of the above named disinfecting fluids, and of the specific gravity stated, this variation in quantity being as mentioned, dependent upon the greater or less degree of offensiveness in the water and the season of the year.

The fluid should be thoroughly mixed with the sewerage, and for the purpose the agitating machine of Mr. Wickstead, which has been adopted at the Leicester Sewerage Works, is preferred, as immediately all offensive odour is destroyed, and a curdling in the sewerage or other foul waters will be observed. This curdling is occasioned by the precipitation of the suspended matter, together with a large amount of organic matter, and the phosphoric acid in combination principally with the oxide of iron. The precipitate contains the components of valuable manures, being rich in nitrogen and phosphoric acid; and, when it is desired to collect and dry this manure, the methods already in use at Leicester are preferred.

For the purification of offensive stagnant waters, either of the disinfectants is employed, in the proportions already mentioned; and, where the space admits, as in docks, the intimate admixture which is necessary for the economical employment of the fluids is effected by means of the agitation produced by the paddles of a steam tug, or other paddle steamer; but where the space is insufficient for such an operation, the mixture is produced by means of wood stirrers.

The patentee does not claim any particular apparatus for manufacturing the metallic compounds which are employed, nor any form of machinery for mixing any disinfectants with sewerage, or other foul waters; but he claims—

1. The employment of that compound of iron to which he has given the name of magneto-chloride of iron, and which is possessed of the properties here described, for the purpose of purifying sewerage, and other impure waters, and separating therefrom materials suitable for use as manure.

2. The employment of the compound of manganese, described, for the same purpose.

3. The production of a deodorant by compounding, as above described, the chloride of manganese and the perchloride of iron, and the employment of this deodorant for the same purposes.

2177.—DAVID WHITE, of 18, High Holborn, London, gas-fitter and engineer, for "*Increasing the illuminating and heating power of gases, and regulating the flow of gases, and improvement in the material for gas-meters, and improvement in glass and cylinder holders.*" Patent dated Sept. 26, 1859.

This invention consists in the application of mica talc or asbestos, to facilitate the combustion of gases; which materials are placed on the top or suspended over or under globes, glasses, cylinders or funnels perforated, with glass rivets to prevent the cap slipping off, the perforations being for the purpose of allowing the heat to escape freely.

The invention also consists of a support for the glass globe of lamps, which is held firmly by being pressed against by a spring in the place of screws.

For regulating the flow of gas, to one or any number of burners, a tube is provided, with a concave piece of metal fitting close to the inner edge having a hole at the end or apex, with a convex cone of metal, suspended as a pendulum. When the gas is of too great a pressure, it will cause the cone to move closer to the concave of metal, thereby making the aperture smaller and checking the pressure of gas to the burner.

In another arrangement, the gas passes from a pipe, screwed into the inlet pipe, to receive the burner, through a plate of zinc or gauze, then through hair, and, lastly, through a plate of gauze or perforated zinc. A nut is screwed into the inlet pipe to hold the zinc or gauze and the plate with the hair close together, the nut being turned up or down according to the greater or less supply of gas required.

The invention also consists of an improvement to be applied to in and out-door lamps, to gas stoves and other appliances for the use of gas, improving the combustion. The bottom is closed, and an opening is provided for the admission of fresh air, and another for the exit of the heated air. In a street lamp, the tube for conveying the gas to the burner is carried in the angle of the frame, and supported by a stay from side to side. The glass or chimney which surrounds the flame has a perforated cover or top to increase combustion, and a regulator to control the flame.

The invention further consists of an improvement in the material used in making gas-meters, by substituting talc or mica plates for metal in the moveable diaphragms, to prevent corrosion.

The claim is for the application of mica, talc, and asbestos; the regulators; the holder; the inside and outside street lamps; improvements in the combustion of gas in stoves and furnaces, and in the material used in gas-meters as described.

2190.—WILLIAM COLLINS, of Salford, Lancaster, engineer and brass-founder, for "*Improvements in stand-pipes for hydrants.*" Provisional protection only obtained. Dated, Sept. 28, 1859.

These improvements are applicable to stand-pipes, used for occasionally connecting the water-mains or conduit-pipes of streets or buildings, with the firemen's hose or flexible pipe, through which water is discharged to extinguish conflagrations; or for uniting pipes for the distribution of water for any other purpose, to the hydrants or valves of the conduit-pipes, from which the water is to be supplied.

The first improvement consists in imparting to the disc which presses back the ball of the hydrant from its seat, a direct and rectilineal motion only, that is to say, a motion in the direction of its spindle, unaccompanied by motion, round the axis of the said spindle, or round its own centre. This is done by means of a screw acting upon the spindle of the disc; whilst the said spindle is restrained, either by its own conformation or by special appliances for that purpose, from revolving. The objects of this improvement are, to prevent the hydrant-ball from being cut or abraded by the edge of the disc; and, at the same time, to make the extent to which the hydrant is opened when in use, variable at discretion.

The second improvement consists in making the screw, by which the spindle of the disc is impelled with more than one thread. The object of this is, to enable the hydrant to be closed or adjusted with greater promptitude and dispatch.

PROVISIONAL PROTECTION

HAS BEEN GRANTED FOR THE UNDERMENTIONED INVENTIONS.

539.—JOHN ALLEN BASSETT, of Salem, Massachusetts, U.S.A., for "*Improvements in apparatus for decomposing steam.*" Feb. 27, 1860.

678.—JAMES SIM, of Aberdeen, N.B., manufacturing chemist, for "*Improvements in meters or apparatus for measuring fluids.*" March 14 1860.

712.—THOMAS RICHARDSON, of Newcastle-on-Tyne, and MANNING PRENTICE, of Stowmarket, for "*Improvements in the manufacture of hydrated oxides, and salts of iron, and salts of the fixed alkalies.*" March 17, 1860.

760.—WILLIAM STUMP LEWIS, of Moseley Street, Manchester, merchant for "*Improvements in the manufacture of illuminating gas.*" March 23 1860.

NOTICES HAVE BEEN GIVEN OF INTENTION TO PROCEED WITH THE UNDERMENTIONED INVENTIONS.

2613.—JAMES PINCHBECK, of Camden Street, Islington, London, for "*Improvements in consumers' compensating gas-meters, which are partly applicable to ordinary consumers' meters.*" Nov. 1859.

619.—GEORGE WALCOTT, of 24, Abchurch Lane, London, civil engineer and contractor, for "*An improved receptacle or receptacles for generating gas.*" March 7, 1860.

677.—JAMES SIM, of Aberdeen, N.B., manufacturing chemist, for "*Improvements in measuring and registering the flow or discharge of liquids.*" March 14,1860.

678.—JAMES SIM, of Aberdeen, N.B., manufacturing chemist, for "*Improvements in meters or apparatus for measuring fluids.*" March 14, 1860.

712.—THOMAS RICHARDSON, of Newcastle-on-Tyne, and MANNING PRENTICE, of Stowmarket, for "*Improvements in the manufacture of hydrated oxides, and salts of iron, and salts of the fixed alkalies.*" March 17, 1860.

Parliamentary Intelligence.

HOUSE OF COMMONS.

THURSDAY, MARCH 22.

PURIFICATION OF THE SERPENTINE.

(*Continued from page* 218.)

The Committee resumed their sittings this day—the Right Hon. W. COWPER, First Commissioner of Works, in the chair.

Mr. *Herbert Williams* recalled, and examined by the CHAIRMAN.

I think that, so far as the safety of the bathers is concerned, there would be no objection to making the Serpentine seven or eight feet in depth in the centre, provided it was rendered shallow at the sides for children. There would be no difficulty in putting down marks, to indicate the depth in such places as were dangerous, and I think very little inconvenience would be experienced by the skaters. The water is now much better than it used to be. Since large quantities of lime were put in, the year before last, there has been a considerable improvement, both with regard to the appearance of the water and the smell. I have no knowledge of the extent to which Hyde Park and Kensington Gardens are drained at present, nor the extent of water which finds its way into the Serpentine from that source.

By Sir J. PAXTON: I have never observed in the winter any soft places in the ice, indicating the existence of springs beneath. The whole of the lake freezes, except where it is affected by the wind. I do not think the springs are sufficiently powerful to affect the formation of the ice.

By Lord J. MANNERS: The introduction of the lime has very considerably improved the character of the lake. The smell has so greatly diminished, that in passing the Serpentine it is scarcely perceptible. If the water were purer, the number of bathers would be very much increased. I am aware that many years ago it was common for people of the higher classes to bathe in the Serpentine, but it is not so now.

Dr. *Woolley*, examined by the CHAIRMAN.

For thirty-two years I was principal medical officer of the Royal Humane Society, and had consequently many opportunities of becoming acquainted with the state of the Serpentine. At the time I resigned, it had become exceedingly offensive, and the colour of it very much resembled pea-soup. I used to notice every spring that there was vegetation at the bottom of the lake, which became detached when the weather grew hot, and then gases were emitted which were highly injurious to health. The cases of persons drowned in the Serpentine have frequently come under my notice. I do not believe that the deleterious quality of the water had much to do with their deaths, for no water gets into the air-passages till the person is dead. Whenever the water comes in contact with the œsophagus, at the top of the wind-pipe, it becomes firmly closed. The mud may get into the throat and nostrils, but until the person is dead none gets into the wind-pipe. In many cases, the time lost in clearing the mud from the mouth and nose has rendered it extremely difficult to save life. I understand that the condition of the water is better now than it used to be, but I have not had much experience of it since 1853. I agree with Mr. Williams in thinking that, if the water were rendered purer, there would be a great increase in the number of bathers, and that it would be a good arrangement to have the water so shallow at the sides that a child might enter it with safety. You might then gradually increase the depth, until it reached six or seven feet in the centre. I have never observed any effect upon the health of persons on the banks of the Serpentine from the state of the water; and, when the mud was moved from the bed of the river, I did not observe any ill effects produced on those engaged in it. I have not observed any marked results when, from floods, the Ranelagh sewer overflowed into the Serpentine.

John Braithwaite, Esq., examined by Sir J. SHELLEY.

I am a civil engineer, and have had many years' experience in connexion with the wells of the metropolis, and I am of opinion that the supply of water in the gravel stratum under Westminster and the vicinity is unlimited. At the Union Club-House, in Cockspur Street, a well 14 feet deep has been sunk, and a supply has been obtained which it would be impossible for an engine of 100-horse power to exhaust. I have no doubt that the stratum is the same as that which feeds the well at Duck Island, only at a higher level. The water flows towards the Thames, and is only headed back by the Thames itself. If you were to pump out completely the existing supply, I agree with the opinion expressed by Mr. Easton and other witnesses, that water from the Thames would pass through the gravel stratum, which forms the best filtering-bed you can get, and would fill up the vacuum. I have made many experiments in reference to the supply of water contained in the gravel bed, and I am satisfied that, if the area of feeding were extended, as much as 4,000,000 or 5,000,000 gallons per day could be pumped up at Duck Island. The water is beautiful spring water, and, though hard, is very pure. No doubt there may be instances in which sewerage matter finds its way into the gravel, but it arises from leaks in the main sewers, and could easily be remedied. In the case of Thorne's brewery, ammoniacal liquor from the gas-works found its way into their well, and an action was brought against the company, and damages were recovered. In the event of the water being pumped out of the well at Duck Island, I should have no fears that its place would be supplied by sewerage matter. The sewers, generally speaking, are built above the gravel, and there is no filtration through the soil. If the sand and gravel were carried away with the water, there might be some risk of injuring the foundations of the houses in the neighbourhood, but I have no fears that anything of the kind will occur. If any settlement has taken place in the case of the houses in Queen Street, it is far more likely to have arisen from the sand and gravel washed away by the sewers, than by the pumping at Duck Island. I am told that hitherto not a barrowful of sand has been taken from the well; and, that being the case, the houses in Westminster can be in no danger. I have seen a report of Mr. James Simpson to the Commissioners of Sewers, in reference to the Victoria sewer, and in that report he attributes the settlement of the houses in the neighbourhood to the sand having been allowed to follow the water, thereby causing a vacuum. At present, the supply of water at Duck Island is so great that you have a column of water to spare 10 feet deep, which, with 5 lb. pressure on the square inch, would give another million gallons per day, if it were required. I think the quality of that water would be equal to that of the Thames at Teddington Lock.

By the CHAIRMAN: I know of no wells being sunk within three or four miles of this place where they have not come to the gravel. The gravel stratum extends for miles, and, generally speaking, underlies the metropolis from Camberwell to Highgate. All the shallow wells in London draw their supply from it. Filtration through gravel is one of the best modes of rendering water clear, but it has not the effect of purifying it in a chemical point of view. I should not think the water from the shallow wells of London was as good for drinking as filtered Thames water. The presence of nitrogenous matters in the water would arise from accidental circumstances. I have no doubt about obtaining a sufficient supply of water for the Serpentine at a higher level than Duck Island, but I should prefer the latter, on account of the small expense required. The drainage of Hyde Park and Kensington Gardens would not yield a sufficient supply to pay for the necessary outlay, and it would not be very pure. In dealing with the bed of the Serpentine, I should not cover over the mud at all, but pump the fluid portion of it through the sewers into the Thames. I should first, however, secure to the public a large and extensive area for bathing of about 130 feet round the whole margin of the lake, by removing the solid mud and forming a gravel bottom; and I should take that gradually from a depth of 18 inches or 2 feet down to 5 feet, with a bank at the lower end raised to within 1 or 2 feet of the surface. The centre I would leave much as it is at present. I would then turn a supply of 500,000 gallons of fresh water per day into this bathing-place, where it would have a circular current, and communicate with the centre of the lake over the bank. I think the whole might be done for 1s. per yard. The outlet for the overflow-water should be near the surface, in order to take off the scum.

By Lord FERMOY: Without the Thames water, I think the gravel stratum in the neighbourhood of Westminster would afford a constant supply of 4,000,000 or 5,000,000 gallons per day. Independent of the Thames, the well at Duck Island would afford an ample supply for every purpose connected with the lakes in the parks. With regard to the metropolitan sewers and cesspools, there is no doubt that they leak occasionally; but any defect could be easily remedied, and I do not think, with proper care, that sewerage matter would find its way into the well at Duck Island. The scheme I recommend would not jeopardize the safety of bathers, as means might be taken, by notices or otherwise, to inform them when they were approaching danger. Of course to swimmers no inconvenience whatever could arise.

By Mr. WALTER: Except in the case of heavy rains, I do not think you would get any large supply from the drainage of Hyde Park and Kensington Gardens. I am acquainted with the nature of the filtering operations proposed by Mr. Hawksley for removing the mechanical impurities, but I have a great objection to them: it is letting out the body, and keeping in the soul. No doubt, as far as appearance goes, the water would be pure and clean.

By Captain ARCHDALL: The stratum of gravel lies in an oblique direction, reaching nearer the surface as it leaves the Thames. To some extent, there is a danger of the works of the Metropolitan Railway intercepting the supply of water from the upper portion; they are apprehensive that it will be so at Paddington, but it will be only during the execution of the works.

By Mr. BLACKBURN: The Thames water which filters into the Duck Island well is practically pure, and for a bed of ornamental water in a park the water is sufficiently clear. I have not gone into the details of my plan, but I would undertake to do it myself for 1s. per yard. You would have occasionally to take out the mud by dredging afterwards. I do not consider that filtering the same water over and over again is so good a plan as obtaining a supply of fresh water, even though it is not equal in quality to that already in the Serpentine.

By Mr. LOCKE: For 1s. per yard I propose to remove the mud round the margin, to equalize the bottom and get rid of all that is necessary in that respect, and to form an embankment of five feet in height. I should have to fill in some portion of the bottom, but over the larger area I should have to cut down. I only know from the sections I have seen what is the depth of the water at 130 feet from the margin, but I think there would be as much material out of the excavations as would make the bank itself. If I had to bring entirely new material, it would cost an extra 1s. per yard. The level of the water at Paddington is much above the level of the Serpentine. There would be no difficulty in getting it to run there by gravitation, and I think a sufficient quantity might be found for this lake. The expense of forming an adit beneath the valuable property at that part would be great. I have given my evidence as to the supply from Duck Island upon the statement that, with the exception of a few yards, the works are already constructed between there and the Serpentine.

Mr. WALTER: With respect to your plan of dealing with the bed of the lake, I undertand you to propose the formation of a shallow margin round the lake, extending for 130 feet towards the centre, but leaving the centre itself very much as it now is. That, of course, would render the lake, beyond the margin you suggest, as dangerous to bathers and skaters as it is at present?

Witness: Precisely.

Mr. WALTER: Is it not a well-known fact that considerable danger arises to a swimmer in going rapidly from shallow into deep water? The temperature decreases as the depth increases, and consequently there is a tendency to expose the bather to sudden chills, producing cramp.

Witness: The bather would be subject to such inconveniences if he chose to expose himself to them, but he could go to the other side, by which means he would avoid them. I think my plan very much better than the proposal to graduate the depth of the lake from the sides to the centre, inasmuch as it would establish a secure bath along the whole length of the Serpentine, and would not exclude you from excavating the mud in the centre and decreasing the depth. The lake in Regent's Park is supplied by water companies, by springs, and by surface drainage. I believe, however, that there is a deficiency in the supply during the summer months.

Dr. *Hassall*, examined by the CHAIRMAN.

I am a member of the College of Physicians. I have made a careful analysis of the water in the Duck Island well, and this is my report. (Report handed in.) My first analysis was of a quantity of water taken from the trough as it flowed from the well. I found that it contained 13·89 grains of chloride of sodium per imperial gallon, 4·3 grains of potash or soda, 26·50 grains of sulphate of lime, 18·55 grains of carbonate of lime, and 4 grains of carbonate of magnesia. It also contained 68·68 grains of mineral matter, and 3·22 grains of organic matter—consisting principally of nitric acid and ammonia. I am, nevertheless, of opinion that, as it contains little or no putrescible matter, if provision is made, as at present, for the daily ingress and egress of the water, the lake in St. James's Park may be preserved in a wholesome state. I have also analyzed a sample of the water obtained from the lake itself beneath the bridge, and I find that its total mineral contents per gallon are 62·57 grains, and of organic contents, 3·44 grains, making a total of 66·1 grains of solid matter.

The CHAIRMAN: Do you attribute that result to the birds being in the lake?

Witness: Yes, and other sources of impurity—the falling of leaves and soot into it, and from exposure to the atmosphere.

The CHAIRMAN: Looking to the result of your analyses, do you consider that the water of Duck Island well is likely to produce vegetable growth?

Witness: Not so likely as the Thames water or the water at present existing in the Serpentine. The colour arises mainly, but not entirely, from the iron which is found in the water. I have also analyzed a sample of the water obtained from the Orange Street works. It presented a perfectly crystal appearance, and the residue remained clear after evaporation had taken place. I found that it contained 76 grains per gallon of saline matter, and only ·97, or less than a grain, of organic matter. The total solid contents per gallon

were 64·12 grains. The water from the Orange Street works is obtained from the chalk, at a depth, I believe, of 300 or 400 feet. I have also analyzed the water of the Serpentine; but I wish to remark, in the first place, that the condition of the water at the present time does not afford a criterion of its state during the hot weather, when decomposition takes place more rapidly. I obtained two samples of water, one from the Hyde Park end of the lake, and the other from Kensington Gardens. The first, from Hyde Park, contained, per gallon, 18·12 grains of saline matter, and 1·97 grains of organic matter. The sample from Kensington Gardens contained 23·56 grains of saline matter, and 2·32 grains of organic matter. A microscopical examination showed that it abounds in animal and vegetable matters; and, though now in its best state, it is evident that the water is very impure. The organic matter was weighed dry, and therefore the two grains just given represents a much larger quantity. The water is less impure now than it was in May, 1857, when I examined it before, as appears from the comparative statement I hand in, when there was a larger quantity of saline matter, and over 6 per cent. of dry organic and putrescent matter. Three reasons may be given for this—1st, it is now winter; 2nd, a quantity of lime was used in the lake last year; and, 3rd, some sewerage matter which formerly went into it is now diverted. I believe it has been stated in evidence that the existence of fish in water affords evidence of its purity. I altogether dispute the accuracy of that assertion. Fish are found in the Thames at London Bridge, but no one would say that the water there is in a state of purity. It is also a notorious fact that trout and other fish live and thrive very well in lakes which are nothing more than mere stagnant pools. Comparing the water in St. James's Park and the Serpentine, I think the latter is the worst. Both the saline and the organic matters are less in the Serpentine, but we must separate the quantity of saline matter in the two waters, which I think has nothing to do with the preservation of that water or with its purity, and we must turn attention to the organic matters only. We have no positive observations to prove that the lime placed in the Serpentine favoured the formation of aquatic vegetation. Although the analyses show that the quantity of organic matter in the water in St. James's lake is greater than that in the water of the Serpentine, it exists in a very different form, and is neither so noxious nor so injurious to health. It has already undergone the putrefactive process in the earth, and is not capable of giving off offensive gases, as it does in the Serpentine, where the organic matter exists in a putrescent form. Speaking generally, I think the water of the well of Duck Island is of the same description as that which is obtained from the shallow wells of London. I should not recommend it for drinking purposes, and I do not say it is the best water that could be procured. There is an appearance about the water in the St. James's lake which is different to the water in the Serpentine; it is not so bright, and I attribute that to the fact that it comes from the well tainted, and, though not so obvious in a bottle, it is very obvious in bulk. I think it is the iron which occasions the colour mainly. I have analyzed the mud in the Serpentine to some extent, with a view to determine one or two points of consequence. I found it to contain 5·70 grains of organic matter, and it was as black as ink, the colour being produced by the presence of sulphuretted hydrogen, which is one of the products of the decomposition of organic matter. As there are many thousands of yards of such mud lying at the bottom of the Serpentine, it is impossible that the water above could be otherwise than charged with organic matter, and be very offensive to those who pass along the banks. No doubt it would become putrescent by exposure to the air, and probably injurious to health. The evidence of the effect produced by bad smells is at present very uncertain, but I think we have enough to show that they ought to be avoided. With regard to the purification of the Serpentine, I think there are three things which are absolutely essential. In the first place, the black and putrid mud at the bottom should either be removed or purified. So long as it is permitted to remain in its present state, no steps can be taken for the purification of the Serpentine that can prove effectual, inasmuch as it is physically impossible for water, which possesses highly absorbent qualities, to remain in contact with such matter and not deteriorate. In the second place, I think the water poured into the Serpentine should be pure, or should contain the smallest possible quantity of decomposible matter; and thirdly, there should be a daily ingress and egress of water sufficient to maintain a gentle current. Without these three things are attained, no plan that can be devised can be successful. It is not absolutely necessary that the mud should be removed from the bed of the lake. It may be thrown up, mixed with chloride of lime, and thoroughly drained. It is also advisable that the bed should not be made of one level, but that it should shelve gradually from the sides to the centre. It would, however, be improper to reduce the depth in the centre to any great extent. It ought to be kept seven or eight feet deep at the least, and the bottom should be hardened in some way, either by being paved or covered with concrete, so that it might be occasionally cleaned out (which would be necessary in any plan that may be adopted) at intervals of from five to seven years. It is stated in the evidence that sewerage matter still finds its way into the lake. So long as that is permitted, it is altogether impossible to purify the water. I am not aware of any facts that would satisfy me that a concrete bed would foster the growth of aquatic vegetation. In the centre, I think there would be very little growth at any time. As to the filtration of the water, I think that Mr. Hawksley's plan, if carried out, would prove entirely abortive. It does not possess one feature which I regard as essential. My chief objections to it are that, as the water is chemically impure, no amount of filtration will purify it sufficiently, and that it is impossible to remove by filtration that organic matter, the decomposition of which causes all the mischief. My analyses agree with those of Dr. Thompson and Dr. Hoffman, but I do not think they have made sufficient distinction as I have done between the putrescent and other matters. It is a very delicate matter in chemistry to ascertain the exact quantities of putrescent matter, but an approximation may be made.

By Mr. BEECH: The presence of confervæ is a sign of the impurity of the water, as it shows there must be much organic matter to feed it. I agree with Mr. Hawksley that it is a mode which nature adopts to cleanse the water, but it is a mode which is only adopted when there is great necessity.

By Mr. LOCKE: If the bed of the Serpentine were altered as I propose, and the overflow of sewerage matter into it cut off, Mr. Hawksley's plan would be beneficial in some respects, but it would be long before the water was purified, because you start with a bad supply, and I would rather take a supply from the water companies. I think the water from Paddington would be much the same generally as that from the Duck Island well, though probably it would be more favourable as regards organic matter.

By W. TITE: I have not made any analysis of the water in canals.

By Sir J. SHELLEY: I found a great deal of iron in the Duck Island well. As it comes up from the well, it is like the water of a mineral spring; but it loses that taste afterwards.

By Sir M. PETO: I have observed the state of the Serpentine after the overflow from the Ranelagh sewer. If you could cut off that supply of impurity, it would effect a large improvement.

Mr. *Robert Warington*, of Apothecaries' Hall, produced and handed in a report of analyses which he had made of the water. He was not examined thereon.

MONDAY, MARCH 26.

J. W. Bazalgette, Esq., examined by the CHAIRMAN.

I am the engineer of the Metropolitan Board of Works, and have had a knowledge of the sewers of London during the last eleven years. Originally the Ranelagh Brook, which rises at Kilburn and West-End, Hampstead, flowed through the valley of the Serpentine. About the year 1700, the Serpentine was embanked, in order to make an artificial piece of water, and the brook continued to supply the lake for about a century afterwards. At that time, houses began to be built upon the area drained by the brook, and the water became impregnated with sewerage matter. By an Act of Parliament passed in 1834 (3 and 4 Wm. IV., cap. 5), the Commissioners of Sewers were required, within nine calendar months after the passing thereof, to construct a weir of two feet in height across the said brook, nearly opposite the end of Albion Street, in the Uxbridge Road, and also a tunnel sewer, for carrying off the sewerage matter, 6 feet high and 4 feet wide at the least. In consequence of that Act, a sewer 6 feet in diameter was constructed across Hyde Park, which sewer continued to take the sewerage for many years; and, when there was a heavy fall of rain, the surplus waters overflowed the weir into the Serpentine. As the district became more built over, and the drainage was more rapidly effected, the occasions of overflow into the Serpentine became more frequent, and a much greater nuisance. The commissioners, by a subsequent Act, were empowered to raise the height of the weir to 6 feet; but, although that answered for a time, the continued increase of buildings, and consequent increase of sewerage waters, it ceased to be sufficiently cleansing to the Serpentine. Efforts were made to stop up the weir, but it was found impossible to do so in the then state of the sewer, because the houses in Gloucester Road and Westbourne Grove became flooded whenever the weir was raised, so that there was a constant contention between the convenience of the houses and the nuisance in the Serpentine. When the main-drainage scheme proposed by the Metropolitan Board of Works was determined upon, it was arranged that the flood-waters, which now pass into the Serpentine, should be carried off by means of a covered sewer passing through Hyde Park, while the sewerage matters will pass away by gravitation through the middle-level sewer to Barking Creek fourteen miles below London Bridge, and be there discharged into the Thames. That sewer is calculated to carry off all the sewerage matter and all the rain-fall, except in cases of heavy floods. Its diameter is 8 feet 6 inches. The route of the sewer through Hyde Park has not yet been determined upon, but the plan of diverting the sewerage waters from the Serpentine is agreed to. I think there is a reasonable hope of the plan being carried out before the end of the summer. As nearly as I can tell, the overflow of sewerage matters into the Serpentine has taken place from twelve to fourteen days per annum, of late years; last year, perhaps not quite so often, as it was a dry season. The overflow only occurs after heavy rains. The Ranelagh Sewer drains only the houses north of Bayswater, but it is a large area, including Westbourne Grove and part of Kilburn. The effect of the sewerage matter escaping into the Serpentine is very offensive near the overflow, and I have no doubt it has an effect upon the whole of the lake. I do not know the character of the mud of the Serpentine.

By Captain ARCHDALL: The sewer which it is proposed to construct will be circular, 8 feet 6 inches in diameter, and it will be constructed through the clay, so that no water will come through it. I should state that the larger portion of the drainage of the park passes through the existing sewer. There is a gravel bed in the upper portion of the park twenty or thirty feet in depth, and a large portion of the drainage from that passes into the existing sewers. It would be quite possible to intercept that drainage, and divert it towards the Serpentine. The depth of the existing sewer is from thirty to forty feet—it is below the level of the lake.

By Sir J. PAXTON: The usual plan, in constructing sewers, is to build the lower portion in concrete, and the upper portion in common mortar. The object is to allow them to drain the area above down to the level of the sewers.

By Mr. BLACKBURN: In the course of another fortnight, the Metropolitan Board will determine the route of the sewer, and then it will be set about at once. No further powers are necessary for the purpose; we have the consent of the crown.

By Mr. LOCKE: The sewers of Westminster are constructed in the gravel bed. The cesspools have been destroyed to a large extent of late years. Ten years ago, the large majority of houses in London were drained by cesspools; but now it is quite the exception, and no large number of the old cesspools now remain in existence. I think that water taken from the gravel in which sewers are built can never be perfectly pure. Seven years ago, in the district round Buckingham Palace, the houses were all drained by cesspools, and there was no subsoil drainage. The gravel comes to within six feet of the surface, and the basements of the houses are below the gravel. Consequently, in times of heavy rain, the basements were filled with water, and people used to pump it out into the gutters in the streets. The sewers were then constructed water-tight at the bottom, to carry the sewerage; but the upper part was not so made, in order that all the gravel-beds might be drained into them.

By Sir M. PETO: The Ranelagh sewer, which is now passing through the park, is getting into a very dilapidated state—the inverts are very imperfect. There is no reason why the old sewer should not be blocked up altogether; and if the water from the gravel-bed is required for other purposes, it would be desirable to do so, as there will be no difficulty in passing the whole of the sewerage matter through the new middle-level sewer.

By the CHAIRMAN: When my plans are carried out, it is intended to disuse altogether the sewer made under the Act of 1834.

By Sir M. RIDLEY: I have not seen the excavations for the Metropolitan Railway, so as to know anything about the water discovered there. No flushing would be required for the tumbling bay across the park.

By Sir J. SHELLEY: The sewers are constructed water-tight at the bottom, and one-third of the way up. There have been sewers constructed lately in the gravel, but the majority of them are in the clay. There is no difference made in the construction of them wherever they are built. I do not think it has much effect upon the sewers themselves, as the percolation is not sufficient, and it is necessary for the perfect drainage of the district in which the sewers are constructed. If the gravel were dry outside, and the sewer were full, there would be some leakage. In the low-level districts, the sewers are tide-locked for twelve or sixteen hours out of the twenty-four every day, but that will not be the case when the main drainage scheme is effected, as there will then be a continuous flow. One of the principal objects of the scheme is to abolish the tide-locked sewer system. The sewers will then only be full in case of sudden and heavy rains, so that any overflow into the gravel will be reduced to a minimum. I think that water drawn from the gravel through which sewers pass is never fit for drinking purposes, as, in times of heavy rain, there will be a slight percolation from them into the soil. I am bound to give a cautious answer upon this point, because I am under a strong

conviction that the cholera in Golden Square was caused by drinking water drawn by pumps from wells into which there was a leakage from the sewers.

Sir J. SHELLEY: Your scheme is, to give a constant flow, so as to prevent the sewers being tide-locked. Now, what I want to know is, whether, when the main drainage scheme is carried out, the practical effect will not be, that there will be percolation?

Witness: It will reduce that percolation very much indeed—to a minimum.

Sir J. SHELLEY: Do you happen to know that the last Commission of Sewers got rid of a vast number of cesspools?

Witness: Yes, about 10,000; and at the time the district boards undertook the duty, in 1856, 50,000 had been destroyed, and the same system is going on very largely still. I think there are not many cesspools in Belgravia. If it has been stated that there are a thousand, I should doubt the fact, and I think I am as well able to give an opinion upon the subject as any man in London. I cannot say that when my scheme is carried out, there will, if it is successful, "be little or no percolation through the gravel." I express a very strong opinion that, wherever sewers are constructed in the gravel, the water is quite unfit for drinking purposes. I think we must abandon the idea of drinking that water when houses are constructed over sewers in the neighbourhood of wells. The main drainage scheme will not prevent the percolation of sewerage water into the gravel—sewers constructed in such a way as to do so would not be effective for drainage. At the time the sewer through the park was constructed, it was sufficient for the purpose of preventing the flow of sewerage matter over the tumbling bay. The necessity for constructing the proposed new sewer across the park arises from the circumstances of the middle-level sewer not being sufficiently large to carry off all the waters. The reason why the latter will not be made larger is, that the sewerage matter of London is very small compared with the quantity of rain that falls, and ordinary rains are very small in bulk compared with thunder storms. It is not oftener than from fifteen to twenty days in a year that we have a fall of rain for twenty-four hours amounting to more than a quarter of an inch; but there are occasions when we have an inch of rain in twenty-four hours. To provide for those extraordinary and sudden falls of rain would require the construction of sewers of enormous diameter, and at an enormous cost. The design of the plan about to be carried out is to take off all the sewerage and the ordinary rainfall, and to allow extraordinary floods of rain to flow into the river as heretofore.

By the CHAIRMAN: I think the main sewers, when completed, will run full; but, when more than full, the overflow will take off the surplus. The quantity of sewerage matter varies very much at different times in the day, and at night the flow is not very great. I suppose that in dry weather, and in the day time, the sewers will run about half full. The effect of the scheme will be to place the low lying districts in the same position as those on the higher levels. I should think a large quantity of water might be obtained from the gravel above the Serpentine, but I have no data to enable me to decide the extent.

By Mr. WALTER: There is infinitely less percolation through the gravel now than there was under the old cesspool system.

T. Hawksley, Esq., recalled and examined by the CHAIRMAN.

I have gone through the evidence which has been given before the committee, and should like to offer some explanations upon it. In the first place, I would say that observations were made about the time which my filter-beds would take to choke up. Upon this point, there appears to be a great deal of misunderstanding. It is true that it occasionally happens under peculiar circumstances, and during very hot weather, the filter-beds choke up; but that, however, is perfectly exceptional. They do not as a rule, and when they do it is easy to remove the matter, and to clean and replace the sand. The whole four which I propose to construct would require cleansing once in three weeks, and in the worst period of the summer it might happen that they would require it during a month or so, once a fortnight; but beyond that, except under extraordinary circumstances which rarely occur, they would not require it; and those occasions would throw no difficulty in the way of working the filter-beds. There is a very simple way of preventing the choking, especially in small filter-beds, and that is to throw over the surface a load of lime—nothing is so easy.

The CHAIRMAN: To ascertain the period at which your filter-beds would get choked, we cannot do better than look at what has occurred in reference to other filter-beds.

Witness: Not at all. You have had before you statements of what occasionally occurs with filter-beds constructed of fine sand, but the purpose for which those filter-beds are used is not the purpose for which the water is filtered here. Those filter-beds are made for the purpose of taking out the finest particles of clay and other matter with which the water is discoloured, but that does not exist in the Serpentine at all. There is no clay, no mud, no dirt in it of any kind, except the vegetable matters referred to, and all you want in a filter-bed is the means of removing this vegetable organization from the water, and it is done by using coarse sand and free filtration. These matters, which are rather fibrous, are immediately held and deposited on the surface of the filter, and the water passes through with greater facility than in the cases laid before the committee. The principle of filtration does not depend upon the particles of sand being smaller than the particles of matter in the water; the matter is gathered to the sand by the attraction of aggregation, just as when you put dirty water in a bottle, a large quantity of the dirt is immediately deposited on the sides. The filter-beds of the East London Water-Works only choke about four times in the course of a year; but it does so happen that occasionally, in peculiar states of the weather, they have been choked in three or four days. I may mention that these filter-beds are made precisely as the Lancashire filter-beds, where the finest quality of water is required. A most remarkable case is that of Mr. Crompton's, the great paper manufacturer. There the water is very beautifully filtered, for the purpose of making paper, although it contains the whole of the sewerage matter of Bolton, and of the large bleaching-works and manufactories for many miles above that place. The filter-beds employed are constructed upon the same plan as these; they are cleaned out about thirteen times in the course of the year, and the cost of the operation is exceedingly small. The whole cost at Leicester, including the keeping of the filters in order, was £40. Those are water-works where the water is intended for drinking purposes, and it is made in as beautiful a condition as can be. The Leicester works were constructed entirely under my superintendence, and I had some difficulty in procuring the sand, having to get it from a distance of thirty or forty miles. I think it is necessary to filter the water in the Serpentine during the winter to a certain extent. It ought to be filtered at the rate of 2,000,000 gallons a day during the hot months, 1,000,000 during four other months, and for one or two days a week during the remaining parts of the year. The filtration by coarse sand which I propose would have no effect upon the chemical quality of the water. The pollution of the water by bathers will never have an injurious effect except it consists of organic matter, and that will be oxidized long before it reaches the mouth of the tunnel—the oxygen in the atmosphere entirely destroys it. In a large lake like this, the number of bathers has no effect upon the water.

The CHAIRMAN: We are told that 250,000 persons bathe in the Serpentine every year. Comparing that number with the area of the lake, do you not think it is desirable to have a fresh supply of water?

Witness: That is another way of putting it. I think the more water you can filter, or the more clean water you put in, the better for the bathers. I think the committee may do both; and, if they can do so with the same apparatus, it would be better to do so. But any quantity of fresh water you can practically get there will be rapidly deteriorated. Supposing it were possible to introduce 2,000,000 gallons of fresh water daily from the gravel, and to allow 2,000,000 gallons to depart altogether, if the quality of the water were the same, it would be a better arrangement than that proposed. But my view is rather of this kind: if you can get 2,000,000 gallons of fresh water, and could also filter 2,000,000 besides, you would make the Serpentine clean to a degree which would be equivalent to putting in 4,000,000 gallons daily. I, therefore, have no hesitation in saying that, whatever quantity of fresh water you get from any place, these works will be exceedingly advantageous; and, in fact, worth the money expended upon them. I state as a fact not founded upon theory, but experience, that the lake would not be so pure, after the admission of 1,000,000 gallons of fresh water daily, as after the filtration of 2,000,000 gallons.

By Mr. LOCKE: I am of opinion that, by any large quantity of fresh water you could put in, you would not get rid of the green matter, and the reason is, that that green matter attaches itself to stones, and other substances on the sides and at the bottom of the lake. You may see it hanging to the spout of a pump, the sides of a horse-trough; in fact, there are three hundred varieties of it.

By the CHAIRMAN: It will not grow in deep water to an equal extent with shallow water. At a depth of 12 or 14 feet, it is not readily produced at the bottom. It is the same growth which in my report I state would require lime to remove it from the margin of the lake. The effect of the bathing in the Serpentine is to disturb this green matter, and detach it from the sides and bottom, and to make it into a complete mash, and the object of the filtration is, day by day, to remove one thirtieth part of that mash. The same effect would be produced if you put in one thirtieth part of the contents of fresh water daily, and allow one thirtieth to be drawn off at the other; and, if you use both plans together, you will get rid of one fifteenth part daily. These matters float in the water, but not at the surface; they are diffused. [Witness quoted from his report to the Health of Towns Commission, in reference to the supply of water to Nottingham, to show the rapid deterioration of well water]. In the Liverpool reservoir, where the water was pumped immediately from a deep well in the sandstone rock, and was as clear as crystal when admitted, it became deteriorated in less than a week, and in the course of a fortnight became one mass of green matter. In reference to the Serpentine, I do not say—do not have a supply of fresh water at all, but, if you do, the system of filtration will be still necessary. There is no water which produces these organisms so rapidly as that which comes out of a spring. The water, after filtration, is more likely to produce these vegetable matters than before, but that is only because by filtration it is brought back into the condition of well water. The witness, who made the observation that half a million gallons of fresh water would be better than two millions of filtered water daily, has had no practical experience in the matter; and all I can say in answer is, that it is not so. I am perfectly satisfied that, by removing one thirtieth part of the water daily, I shall get rid of one thirtieth part of these organisms daily. It is not possible to remove it by a drag net; it is for the greatest part microscopic. If the confervæ could be mechanically removed, my system of filtration would not be necessary. The mischief of this vegetable matter, which requires that it should be taken out, is the disagreeable discoloration it causes in the water, and the deposit which it causes at the bottom. The mud which is formed there is not deposited from the sewerage matters, but is mainly produced by the decay of these organisms. There is no possibility of obtaining a sufficient quantity of water for the Serpentine, except by resorting to the Thames or the Colne. Sinking wells in the gravel, although affording a supply in aid, and therefore desirable, would not in itself be sufficient. I have no doubt you might get 200 or 300 gallons per minute, if a well were sunk below the gravel near the head of the Serpentine. The reason why that course did not appear to be a preferable one was, that the quantity would be so small, compared with the quantity which could be obtained through the filter-beds, and because Mr. Fitzroy desired me to confine my attention to the purifying of the water in the Serpentine. The well in Trafalgar Square yields 300 gallons per minute, and the well of the New River Company 400 gallons. I do not think I should be justified in saying that this would give more than 300 gallons. I have not the means of knowing the quantity of water which could be obtained from the gravel at a higher level. I have been to the works of the Metropolitan Railway, and find they have some water; at present it is small, and it would be quite impossible to say what the ultimate quantity will be. In reference to the surface drainage of the park, I find that it is now about 111 acres, and that 140 acres have been shut off, which can be brought back again into the Serpentine without any difficulty whatever.

By Mr. WALTER: My survey did not extend to Kensington Gardens. A very much larger area of surface drainage could be brought into the Serpentine, at the head of it, and it would not be an expensive operation. I have no doubt you could bring in as much as 4 feet in depth annually from the surface drainage. The Serpentine is overflowing this morning, although all yield from the Chelsea works is cut off.

By the CHAIRMAN: I was asked about the mud in the Serpentine, and I have brought some here, which was taken from the head of the lake when they were excavating, immediately where the sewer comes in. It does not smell at all. I do not attribute its innocuousness to the large quantity of lime thrown in last year. There was a thin stratum of lime on the bed when the water was drawn off. This mud is not formed of decaying but of decayed matter, and that constitutes the entire difference. At the same time, if it were kept, the sulphur and phosphorus which it contains being partly composed of animal matter, would become immediately active. Every one knows what flour of brimstone is; there is no smell from it, except it is lighted, and then it gives off gases which are destructive to human life. The heat of the summer's sun would be sufficient to make this mud active in certain conditions. I was asked as to the cost of preparing the upper part of the Serpentine for bathers. I find, including everything—excavating, concreting, planting the slopes, &c.—the expense would be about £7500, in addition to the £17,000 already voted by Parliament; that is, beginning at the top of the bend at three feet in depth, and terminating at the bridge at six feet, or less if desirable. Of this sum, £3130 would be for concrete. I have calculated in this the removal of the mud at 2s. 6d. per cubic yard. The bed of concrete would be placed principally upon the clay; it is a very favourable situation. There would be no loose gravel or sand under the concrete. If gravel were used instead of concrete, the expense would be less, by about £2000. (Plan of proposed scheme handed in.) I was asked as to the amount of evaporation in the Serpentine, and I have ascertained it to be, upon an average of the summer months, after the rate of 100,000 gallons a

day. From that has to be deducted the quantity of water brought in by the springs, the rainfall, and the water company's supply. (Witness handed in a report of experiments made by him as to the quantity of water which could be obtained from the Duck Island well, and also Dr. Miller's analysis of the water). As to the comparison of cost between the filtration scheme, and the plan for supplying the Serpentine with fresh water from Duck Island, I have in vain endeavoured to understand it; it certainly does not agree with the actual facts of the case. We do not disagree in this, that the cost of raising 1,000,000 gallons of water will be £2. It consequently follows that, to obtain that supply per day would cost £730 a year, without taking into account the interest upon capital employed; whereas, by the works which have been adopted, the same thing can be done for £300. I am, therefore, entirely at a loss to conceive how the works which I have had the honour to recommend are more expensive than those. If, in addition, there be raised 500,000 gallons per day from the well, then the cost would be increased to £450; so that you would have 1,500,000 gallons for £450, as against 1,000,000 for £730. Then, as regards interest, new works must be made if the water is to come from Duck Island, and the money expended upon those works must, of course, be added to the cost already incurred and the contractors' claim for loss of profit. I find, by a letter I have received from the contractor, that his claim at present is between £8000 and £9000; there are also the claims of Bolton and Watt and Mr. Thomas, and there is the other work not included in the contract, besides the professional and other charges. The total expenditure to the present time may therefore be taken to be not less than £14,000. There is very little which remains to be done—it is chiefly fixing; consequently, it is perfectly evident that the estimate which has been laid before the committee is, under any view of the case, quite delusive.

By Mr. LOCKE: With the exception of some difference which might arise between what I should allow to Mr. Bird (the contractor) and what he claims; —and upon that I have no right to express an opinion here—the amount will be £14,545. I have put Mr. Bird's claim down at £8500, plus what he will expect as compensation for giving up the contract, and for the delay.

By Mr. WALTER: There is no foundation, in fact, for the supposition that the water in the Serpentine is impure. It will be in a more favourable condition for generating organisms after filtration. It would be a race between filtration and the growth of organisms. They would, perhaps, accumulate more rapidly than I could remove them, unless I knew what I am about; but I know which will beat—I know that the filtration will beat the growth.

By Captain ARCHDALL: The growth of these organisms is one of the methods of nature to clear the water; I propose to remove them when they have performed their office. They are quite innocuous when they are in that state, but they are in a condition to pass into another state. When they die, they decompose, and it is this decomposition which produces the black mud. While passing through one stage to another, they are not innocuous. When I was called upon by the First Commissioner of Works, it was distinctly understood that I was only to purify the water. I stated that the process of filtration was perfectly well known before my professional existence, but its application to the present case was my own.

Captain ARCHDALL: Do you think that any man in his senses, who had his own purse to depend upon, would have incurred this expenditure upon the chance of an improvement taking place?

Witness: Not unless he had a pressure from without, which was what compelled the First Commissioner to do something.

By Sir M. PETO: When I gave my advice to the First Commissioner, I had a knowledge of what was intended to be done by the Metropolitan Board of Works, and my plan was based on the certainty of the sewer being diverted. My plan was independent of any arrangement for the bathers and skaters, as Mr. Fitzroy distinctly reserved that. He said it was not a matter that I could interfere with at all, and that, though it might hereafter have to be done, he could not at that time ask the House for a vote for the purpose. The answer I made to him was, that the works which I had proposed would be just as valuable after the bottom should be altered, and just as necessary as before. I was aware that Mr. Fitzroy had himself gone into the subject with reference to levelling a part of the northern shore for the bathers. Nothing has arisen in the course of this inquiry to shake my confidence in the plan which I proposed.

By Sir J. SHELLEY: If the filtration process were to be abandoned tomorrow, the money expended would not be thrown away. It would be easy to fill in the filter-beds, and use them for flowers; or there is another plan which is better, and that is, to make a winter garden upon them—there wants nothing altered, not a brick. [Exhibited plan for carrying out this proposal.] One filter-bed is nearly finished, one is about three parts finished, and one is more than half finished. The engine-house is only up to the ground, and the lower portion of the filtering medium is put in. I estimate that the evaporation in the Serpentine during the summer is the eighth of an inch per diem; but, for the next two years, that is compensated for by the supply from the Chelsea Water-Works. That supply is brought in at the head of the lake, and nine-tenths of the people who visit the Serpentine suppose that it is sewerage water which they see flowing in. If it were proved that at Trafalgar Square the supply from the well was 650 gallons per minute, I should not be surprised; but the question is, what is the permanent yield of that spring? and it has been shown, by papers in the office of the Board of Works, that it is only 300 gallons. If it could be proved to be more, I should be delighted, because it would give me a hope of getting a double quantity at the head of the Serpentine.

By the CHAIRMAN: I do not consider that the water of the Serpentine, after filtration, would be as fit for drinking purposes as the water which the companies deliver for the supply of London. There is about one grain more of organic matter in it; but, if both waters, at the same temperature, were put into glasses, a person examining them in a dark room would not be able to detect any difference, either by smell or taste.

This closed the examination of witnesses, and the room was cleared, that the committee might consult.

THURSDAY, MARCH 29.

The committee met this day to consider their report, of which the *Times* has published the following as having been agreed upon:—

REPORT OF THE COMMITTEE.

The select committee appointed to consider the best means of effectually cleansing the Serpentine have considered the matters to them referred, and have agreed to the following report:—

"1. The sheet of water called the Serpentine, was derived from the Ranelagh brook, which, after springing in the Highgate Hills, ran along the Bayswater Valley through Kensington Gardens and Hyde Park, under the ancient Knightsbridge, into the Thames.

"2. The waters of this brook, having been checked by the dam which was thrown across the lower end of the Serpentine in the reign of King William III., flowed into gravel pits and ponds which were adjacent to their channel, and occupied their present area in 1730. As population increased in the districts through which the brook passed, it lost its character of a brook, and became known as the Ranelagh Sewer. Its current had become so offensive in 1834, that an Act of Parliament was passed to divert it from the Serpentine through a covered channel, and since that period only the overflow, in heavy or continuous rains, has reached the Serpentine. This overflow is the main cause of the complaints which have been made of the state of the Serpentine, and constitutes such a nuisance as in our opinion ought to be immediately abated. The engineer of the Metropolitan Board of Works has informed us that the board are about to commence works for the purpose of intercepting all this sewerage, and that these works will be completed before the end of the summer. When this is done, the main cause of the past deterioration of the water, will be removed.

"3. The mud, which has been accumulating for so many years, covers the bottom of the lake to a thickness of 9 feet in some places. It is black and partially semi-fluid, containing a large proportion of decaying organic matter, and is very prejudicial to those who, by accidents in bathing, skating, or otherwise, are immersed in it. The foulness of the Serpentine, which renders it so unfit to be the place of recreation for the multitudes of all classes and from all places, who flock to the metropolis, is attributable mainly, to the following causes:—The occasional admission of sewerage, the contamination arising from putrefying mud, the deposit of soot and other impurities of the London atmosphere, the results of bathing, and the stagnation of the water.

"4. The only correctives heretofore applied to the evils arising from these impurities have been—the supply of a certain quantity of fresh water obtained from springs in the lake itself, the rainfall and water-shed, and from the Chelsea Water Company. These, however, have not been sufficient either for removing obnoxious exhalations, or for clearing the water of confervæ and other vegetable productions; and, during the summer months of 1858 and 1859, a quantity of quicklime was thrown into the water, by which, for a time at least, the evils complained of were diminished.

"5. Several plans and estimates have been submitted to the Government for remedying this evil condition. Sir John Rennie, in September, 1848, proposed to remove the mud, and to obtain a supply of fresh water from the water companies, or from the Brent or Verulam; Mr. Mann proposed in November, 1848, to cover the mud with concrete, in the manner which was subsequently adopted with regard to St. James's lake in 1857. Messrs. Easton and Amos, in December, 1848, proposed also to cover the mud with concrete, and they submitted another project, in April, 1857, for supplying water to the Serpentine from a well in Duck Island. In 1858, Mr. Page was instructed by the First Commissioner of Works to investigate the question, and in 1859 a plan was prepared by him, which he stated would put the Serpentine into a clean and sanitary condition, and maintain it in that state, and also render it less dangerous to bathers and skaters. This plan received the sanction of the Government, and was submitted by them to Parliament. Owing, however, to a change of Government before the civil estimates were voted, the opinion of Parliament was not taken upon it; and Mr. Hawksley was re-quested, on the 7th of July, 1859, to prepare a scheme, which he submitted on the 15th of July, and which was adopted by the First Commissioner of Works.

"6. A sum of £17,000 was voted by Parliament for its execution, and tenders were accepted on the 25th of November, 1859; and, although the works have made considerable progress, they are as yet incomplete.

"7. This plan was intended to purify the water by filtration, without dealing with the mud, and without any increase in the supply of fresh water. It aimed at removing the fibrous filaments of confervæ, the naviculæ, and other lower orders of aquatic vegetation which occur in still water containing free carbonic acid or bicarbonate of lime, and which produce a disagreeable appearance in the water.

"8. This object was to be secured by causing the Serpentine to circulate through filter-beds of sand, so that a 30th part of its whole bulk might pass daily through the filter during the six hottest months, a 60th during four of the colder months, leaving it at rest the remaining two months of the year.

"9. This plan was recommended for its efficiency and economy, as enabling a larger quantity of water to be purified in this way than by any other means. But against this it has been urged that, in comparison with other schemes, its results will not be worth its cost; that the cleansing of filter-beds close to public walks is likely to be offensive; that it will become unnecessary whenever a copious supply of water is obtained, and that the works necessary for its execution will be prejudicial to the appearance of that portion of Kensington Gardens where they are situated.

"10. Although river-water drank in towns is commonly passed through filters of sand on its way to the houses to which it is distributed, and although filtration is also used to purify water for some manufactures, yet no instance has been mentioned to us of its having been employed for the purpose of keeping a large body of water in a permanent state of purity; and we have received much evidence as to facts which might guide us in coming to a conclusion upon the probabilities of success which may attend such an experiment.

"11. The proposed filtration is not stated to be such as can remove impurities held in solution; and, considering that the object in view is not only to provide an ornamental piece of water, but a bath in which many more than those who, in the present repulsive condition of the water, take 260,000 baths yearly, may seek health and recreation, your committee are of opinion that the common mode of supplying a lake with fresh water is preferable to the new and ingenious contrivance of refiltering continuously even a larger annual quantity than can be supplied from a well or a river.

"12. If a supply of fresh water sufficient not only to replace the waste, but to provide for a continual change, were impossible to be obtained in the absence of another alternative, filtration might be justifiable; but your committee believe that such a supply of fresh water may be obtained from the springs within or contiguous to the Serpentine, from an enlargement of the water-shed of the parkand Kensington Gardens, and from other sources which have been pointed out to the committee. Some of this supply may be obtained by means of simple gravitation, at a small expense.

"13. Conflicting evidence has been given as to the quantity and quality of the water that can be pumped from the well in Duck Island, but Mr. Hawksley states in his evidence that he entertains no doubt that a considerable supply of water can be procured in the neighbourhood of his works, and that an increased amount of water could be drawn into the Serpentine by an extension of the surface drainage of the park and Kensington Gardens.

"14. We have had, however, a more embarrassing task than to decide merely whether Mr. Hawksley's plan is the best for effectually cleansing the Serpentine. We have had to consider whether that plan, recommended by great engineering authority, adopted by the Executive Government, sanctioned by Parliament, and nearly approaching its completion, is so unsatisfactory in its object and means that it ought to be arrested, even in its present stage of advancement, and the work which has been performed diverted to other purposes. After much patient investigation, we have arrived reluctantly at the conclusion that the proposed filtration will not be effectual for the desired object, and that this cleansing process ought not to be carried

on in one of the most beautiful spots of Kensington Gardens. We recommend, therefore, that the project of filtration be abandoned, and that the best available supply of fresh water be poured in to such an extent as to produce some continual flow.

"15. Whenever the Metropolitan Board have completed their works for the diversion of sewerage from the Serpentine, measures should be taken for rendering the bed of the lake clean and hard. We have not come to any conclusion as to the extent to which the mud ought to be removed, hardened, or covered, nor as to the relative merits of gravel or concrete as a covering, nor as to the expediency of burning it, nor as to the depth which would best promote the convenience and safety of bathers and skaters, and the purity of the water; but we are of opinion that the present condition of the bed of the Serpentine absolutely requires amendment."

A BILL FOR BETTER REGULATING THE SUPPLY OF GAS TO THE METROPOLIS.

Whereas the following gas companies, (that is to say), "The Gaslight and Coke Company," "The City of London Gaslight and Coke Company," "The Commercial Gaslight and Coke Company," "The Equitable Gaslight Company," "The Great Central Gas Consumers' Company," "The Independent Gaslight and Coke Company," "The London Gaslight Company," "The Phœnix Gaslight and Coke Company," "The Ratcliff Gaslight and Coke Company," "The Surrey Consumers' Gas Company," "The South Metropolitan Gaslight and Coke Company," "The Western Gaslight Company (Limited)," "The Imperial Gaslight and Coke Company," "The Wandsworth and Putney Gaslight and Coke Company," "The Woolwich, Plumstead, and Charlton Consumers' Gas Company," "The Town of Woolwich Gaslight Company," "The Woolwich Equitable Gaslight and Coke Company," "The Brentford Gas Company," "The Victoria Docks Gas Company," or some of them, are respectively incorporated under the authority of Parliament, for the purpose of supplying several districts of the metropolis with gas; and the said companies, instead of supplying gas by several mains in the same district, have agreed, as far as possible, each one to confine its supply to a separate district, in order to economize capital and avoid the too frequent opening of the public streets, and subject to the provisions and restrictions of this Act, it is expedient that such districting should receive the sanction of Parliament: And whereas the regulations to which those companies are subject are not uniform: And whereas it is expedient that provision be made for the due regulation of all companies and persons, supplying gas within the metropolis, with respect to matters in which the consumers of gas are interested: May it therefore please your Majesty that it may be enacted; and be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows; (that is to say,)

I. This Act may for all purposes be cited as "Metropolis Gas Act, 1860."

II. "The Companies Clauses Consolidation Act, 1845," (except so much thereof as relates to the recovery of damages, not specially provided for, and penalties,) "The Lands Clauses Consolidation Act, 1845," (except so much thereof as relates exclusively to the purchase and taking of lands by compulsion, and to the recovery of forfeitures, penalties, and costs,) and "The Gas-Works Clauses Act, 1847," (except so far as the provisions thereof are inconsistent with this Act,) are incorporated with and form part of this Act, and shall apply to the several companies before named, as fully as if the gas-works of the several companies were authorized by this Act.

III. This Act applies to the several gas companies named in the preamble to this Act, and to every other company already or hereafter to be established for supplying gas within the metropolis, so far only as regards the supply of gas within the metropolis, and to all persons, not being companies, who, as a trade or business, already or hereafter supply gas within the metropolis, and whether those companies and persons respectively do or do not make gas as well as supply gas.

IV. In the construction of this Act, the following words and expressions have the following meanings, unless excluded by the subject or context; (that is to say,)

The expression "gas company" means and includes any and every company to which, and any person or persons supplying gas to whom, this Act applies:

The expression "local authority" includes vestries and other parochial boards and bodies, district boards and trustees, commissioners and persons, respectively having or exercising jurisdiction over or in any of the streets, in the metropolis, and having authority to contract for the lighting of the street.

The word "consumer" means a person receiving or entitled, in accordance with this Act, to receive a supply of gas from any gas company:

The expression "the metropolis" has the same meaning as in the Act of the session of the eighteenth and nineteenth years of her present Majesty, chapter one hundred and twenty, for the local government of the metropolis:

The word "district" means, with respect to every gas company now or hereafter incorporated for supplying gas wholly or in part within the metropolis, the district, so far as it is within the metropolis within which the gas company are from time to authorized to supply gas, and which is actually for the time being supplied by the company, and means, with respect to any person or persons not being a gas company, but supplying gas wholly or in part within the metropolis, the district within the metropolis within which he or they shall from time to time as a trade or business supply gas:

The word "street" includes square, court, alley, highway, lane, road, thoroughfare, and public passage or place:

The word "premises" includes public and private messuages and other buildings, lands, and tenements whatsoever:

The expression "the gas-works" means the works of the respective gas companies, and the works connected therewith:

The expression "gas-rent" includes all rents and other payments for a supply of gas:

The expression "meter-rent" includes all rents and other payments for the use of gas-meters:

The expression "police magistrate" means any police or stipendiary magistrate acting in and for the district of the metropolis in which the matter referred to him arises.

V. The limits of this Act shall be the metropolis.

VI. Every gas company from time to time supplying gas within any district shall, as to any premises or street within such district not already supplied with gas, and which shall lie within *one hundred* yards of any existing mains, at their own expense, on being required by the owner or occupier of any premises within the district or in part within the district, or by any local authority being a local authority wholly or in part within the district, provide and lay all proper and sufficient communication, service, and other pipes, up to the premises to be lighted, to communicate with the gas company's mains, and shall, if so required by the owner, occupier, or local authority, furnish him or them, at the gas-rent prescribed by this Act, with a supply of gas for the purpose of being used in or on the premises, or for lighting the street; and if so required by the owner, occupier, or local authority, furnish him or them, at the meter-rent prescribed by this Act, with one or more meters, for ascertaining the quantity of gas consumed; provided that the gas company shall not be bound to supply any meter exceeding a sixty-light meter.

VII. Provided, that the owner or occupier, if so required, in writing, by the gas company or any of their officers, shall, before being entitled to have the pipes provided and laid, or to have a supply of gas or of meters furnished, give to the gas company such security for the payment of the gas-rent for the gas to be supplied to him, and of the meter-rent for every meter to be supplied to him, as he and the gas company agree on.

VIII. Provided, that if the owner or occupier and the gas company cannot agree thereon, the security to be given shall be determined by a police magistrate; and any single police magistrate shall, on the application of the owner or occupier and the gas company, or either of them, determine the nature and amount of the security to be given; and the security may, as the police magistrate thinks fit, be the deposit with the gas company, or with any person approved by the police magistrate, or the prepayment to the gas company, of a sum of money or any other security which the police magistrate thinks sufficient and reasonable; and the determination of the police magistrate shall be binding on all parties and final: Provided that if the security be the deposit with the gas company of a sum of money, the gas company shall pay interest thereon to the consumer at such rate as the police magistrate shall determine.

IX. If the gas company, not being entitled to require or not having required any security, wilfully fail for *three* days after being thereunto required in writing by the consumer, or where the security agreed on or determined by the police magistrate is given, shall wilfully fail for *fourteen* days thereafter to provide and lay all proper and sufficient communication, service, and other pipes, or to furnish a supply of gas, or to furnish any meter, pursuant to the provisions of this Act, then and in every such case the gas company shall, on a summary conviction before a police magistrate, forfeit and pay to the consumer not exceeding *forty shillings* for every day after the expiration of the *fourteen* days during which the failure continues.

X. Provided, that every private consumer shall, if so required in writing by the gas company, consume the gas by meter, but any consumer may, if he thinks fit, provide his own meter.

XI. Subject to the provisions of this Act, every gas company, from time to time, may enter into any contract with any owner, occupier, or local authority for all or any of the following purposes; that is to say, for supplying him or them with gas, and with pipes, burners, meters, lamps, lamp-posts, and other apparatus, and for the repair thereof, in such manner and on such terms and conditions as the parties agree.

XII. Provided, that notwithstanding its being required by any Act of Parliament or otherwise that the gas company's contracts shall be under seal, every contract of the gas company entered into in accordance with this Act shall without seal be binding on them, if the contract be signed by at least *two* of their directors, or by their secretary or other officer, by the authority of at least *two* of their directors.

XIII. Provided, that no contract for any of those purposes shall contain any term or condition contrary to any of the provisions of this Act, or for giving in case of difference the sole arbitrament thereon to the gas company or any of their officers or persons in their employ, or to any other person acting otherwise than independently between the parties or for requiring any notice by a consumer discontinuing his supply of gas or meter, which shall make him liable to pay more than *one month's* gas-rent or meter-rent after the time of the service of the notice, or which shall entitle the gas company, except for breach of any of the provisions of this Act, to discontinue any supply of gas by less than *one month's* notice in writing to the consumer, unless the rent due for gas shall be in arrear.

XIV. The gas company shall well and effectually light all public lamps in all streets which they are required by the local authority to light, and shall supply to the local authority so much gas as they require for their public lamps; provided that the gas company shall not be compelled to light any street with lamps at a greater distance from each other than *one hundred* yards.

XV. The local authority may provide and keep in repair their own public lamp-posts and lamps, and apparatus connected therewith, and light and extinguish the lamps, and defray the expenses thereof.

XVI. Every gas company shall, unless prevented by necessary repairs or unavoidable accident, at all times keep all their branch or service-pipes fully charged with gas, and the stop-cocks so turned as not to prevent the branch or service-pipes from being completely at all times filled with gas.

XVII. A pressure of not less than *ten-tenths* or *one inch* head of water shall be maintained at all times on the service-pipes of the gas company within the premises of the consumer.

XVIII. The quality of the gas supplied by any gas company shall be, with respect to its illuminating power, such as to produce from an argand burner having fifteen holes and a seven-inch chimney, consuming five cubic feet of gas an hour, a light equal in intensity to the light produced by *twelve* sperm candles of six to the pound, each burning *one hundred and twenty* grains an hour, and shall with respect to its purity be free from ammonia, bisulphide of carbon, sulphuretted hydrogen, and other agents deteriorating its quality or its illuminating power.

XIX. If the gas supplied by the gas company be at any time of less illuminating power or of less purity than according to this Act it ought to be, the gas company shall for every such offence, on a summary conviction before a police magistrate, forfeit not exceeding *fifty pounds;* and also, in addition to that penalty, and whether that penalty be recovered or not, a further *ten pounds* for every day after notice in writing from the local authority during which the offence continues.

XX. Every local authority taking any supply of gas according to this Act may provide all proper and sufficient apparatus, machinery, and instruments for testing the pressure, illuminating power, and purity of the gas, and from time to time may appoint, and out of any funds applicable by them for their local purposes, may pay, a chemical examiner or gas engineer, or other competent person, to be an examiner for the purposes of this Act.

XXI. The examiner, when and so often as is necessary or as he is so directed by the local authority appointing him, may examine the pressure, the illuminating power, and the purity of the gas supplied, and shall present to the local authority, so often as they require, a report, stating the number of examinations on which the report is founded, and the maximum, mini-

mum, and average pressure, illuminating power, and purity, or the pressure, illuminating power, and purity from day to day or at longer intervals, of the gas supplied during the whole period to which the report relates, with such other information and remarks thereon as may be deemed necessary.

XXII. Provided, that two or more local authorities, if they think fit, may join in providing the apparatus, machinery, and instruments, and in appointing and paying the examiner, and he shall attend to the requirements, in accordance with this Act, of and make his reports to every local authority so joining in appointing and paying him.

XXIII. Any consumer may make complaint to any police magistrate with respect to the pressure, illuminating power, or purity of the gas supplied to the complainant, and the police magistrate may entertain and hear the complaint, and proceed thereon as he thinks just.

XXIV. The police magistrate, at any time within *one week* after the making of the complaint, may, if he thinks fit, appoint a competent person to examine into the complaint, and to report thereon to a police magistrate, and may by the order appointing that person, or by any subsequent order applied for by that person or any party interested, give to him all such powers, authorities, and directions as the police magistrate thinks proper and sufficient.

XXV. The person so appointed shall immediately on his appointment have power to and shall forthwith inspect and examine the gas-works of the gas company, and shall inquire into and concerning the grounds of complaint, and shall make a report thereon in writing to a police magistrate; and if the police magistrate to whom the report is made be not satisfied with the report, he may order any further examination and report which he thinks fit.

XXVI. After such examination and report as a police magistrate thinks sufficient, he may direct that notice be given to the complainant and the gas company to appear and be heard on the report, at such time as he appoints, and each party shall thereupon appear and may be heard before a police magistrate, by themselves, their counsel, attorneys, or agents.

XXVII. Where on the hearing, and whether or not the gas company have appeared, it appears to the police magistrate that the complaint or any part thereof is well founded, he shall make an order declaring that the same is well founded, and ordering the gas company to pay any penalty or penalties thereby incurred, and to remove within a reasonable time the grounds of complaint, and he may by the order direct that any specific acts shall be done by the gas company for removing the grounds of complaint, and may make any order as to costs; and all orders so made shall be final and binding on all parties.

XXVIII. Where the gas company are served with any order so made, they shall, within the time limited by the order, remove the grounds of complaint thereby declared to be well founded, and pay the penalty or penalties, and the damages (if any) and costs (if any) thereby ordered to be paid by them.

XXIX. The gas company, and their officers, agents, and servants, and where there is any complaint made, the complainant, shall afford to the examiner appointed by the local authority, or, as the case may be, to the person appointed by a police magistrate to examine and report, all reasonable facilities for the respective inspection, examination and inquiry; and the examiner and person so appointed respectively shall have power to call for all books, papers, writings, and documents relating to the subject of inquiry: and every person obstructing any such examiner or person so appointed in the exercise of his respective duties under this Act shall for every such offence forfeit not exceeding *ten pounds*.

XXX. After the *thirty-first day of December One thousand eight hundred and sixty* no gas company shall demand or take for any gas or meter supplied by them any sum of money exceeding the gas-rent or meter-rent by this Act authorized, save only under and in accordance with the terms of any special contract, entered into before the *fifteenth day of November One thousand eight hundred and fifty-nine*, and on the *thirty-first day of December One thousand eight hundred and sixty*, in force.

XXXI. Provided, that any special contract made with, by, or for any gas company after the *fifteenth day of November One thousand eight hundred and fifty-nine*, for a supply of gas or of a meter at any higher gas-rent or meter-rent than is by this Act authorized, shall not entitle the gas company to recover thereunder any higher gas-rent or meter-rent than is by this Act authorized.

XXXII. The gas company shall not charge a higher price by the *one thousand* cubic feet for gas supplied to any local authority than the current gas-rent by the *one thousand* cubic feet from time to time charged by them to private consumers in that part of the district supplied by the gas company are; and if any difference arise betwen the local authority and the gas company with respect to the gas rent to be charged for lighting any public lamp, the difference shall be referred to and be determined by arbitration in the manner prescribed by the "Companies Clauses Consolidation Act, 1845," with respect to the settlement of disputes by arbitration.

XXXIII. In case any consumer leave the premises where gas was supplied to him without paying to the gas company the gas-rent or meter-rent due from him, the gas company shall not require from the next tenant of the premises payment of the arrears so left unpaid, unless the incoming tenant agreed with the defaulting consumer to pay the arrears; but the gas company shall, notwithstanding any such arrears, in the absence of collusion between the outgoing and incoming tenant, and on his entering into the usual contract, supply gas to the incoming tenant, as required by this Act, on being required by him so to do.

XXXIV. Any gas company may charge for gas supplied by them of the purity by this Act required, and the illuminating power of which is such as to produce from a burner consuming *three* cubic feet of gas an hour a light not exceeding in intensity a light produced by *twelve* sperm candles each burning *one hundred and twenty* grains an hour, any sum they think fit not exceeding *four shillings* for every *thousand* cubic feet; provided that if any gas company supply gas of a higher illuminating power than that they may charge for the gas so supplied by them any sum they think fit not exceeding *five shillings* for every *one thousand* cubic feet; but no gas company shall be entitled to make the higher charge without first giving to the consumer *three* months' notice of their intention so to do.

XXXV. Every gas company supplying meters, and entitled to charge a rent for the same, may charge for the same meter-rents at the following yearly rates; (that is to say,)

	£	2s.	6d.
For a *two*-light meter		4	0
For a *three*-light meter		4	10
For a *five*-light meter		6	0
For a *ten*-light meter		8	0
For a *twenty*-light meter		11	0
For a *thirty*-light meter		16	0
For a *forty-five*-light meter	1	2	0
For a *sixty*-light meter	1	7	0
For an *eighty*-light meter	1	12	6
For a *one hundred*-light meter			
For any other meter less than a *one-hundred*-light meter a sum in due proportion to these sums.			
For a meter above a *one hundred*-light meter a sum equal to *one-tenth* of the cost to the gas company of the meter.			

Provided that for a fraction of *one month* the gas company may demand and take the meter-rent payable to them as for *one month*.

XXXVI. If any meter, from any cause whatever, wholly ceases for any time to register, or is found on examination by an inspector exercising any powers conferred by the "Sale of Gas Act," twenty-two and twenty-three Victoria, chapter sixty-six, to register incorrectly against the consumer, so that the amount fairly due for gas consumed during the time cannot be ascertained, then, if any dispute arise between the gas company and the consumer as to the amount to be paid for gas during the time, the consumer shall pay per month the same sum as accrued during the last preceding month when the meter was in order.

XXXVII. Every gas company shall, within *two* months after every ordinary meeting, whether yearly or half yearly, of the gas company, and within such other period as Her Majesty's principal Secretary of State for the Home Department from time to time requires, transmit to him a report in writing, signed by the governor, deputy-governor, chairman, or deputy-chairman or one of the directors or members of the committee of management of the gas company, of the state of the gas company and their works, and the means possessed by the gas company for securing the continuance of their operations, and such other matters relating to the works and proceedings of the gas company as the Secretary of State from time to time requires; and if any gas company fail so to do they shall for every such offence forfeit not exceeding *fifty pounds*, to be recovered, with full costs of suit, by Her Majesty's Attorney-General, as a debt due from the gas company to the crown.

XXXVIII. Every gas company shall within *one year* after the passing of this Act cause a map to be made of the district within which their mains or district mains then lie, on a scale not less than *six inches* to a mile, and shall cause to be marked thereon the line, situation, and diameter of all their then existing mains and district mains, and shall from time to time, within *six* months after the making of any alterations or additions, cause the map to be corrected, and such additions made thereto as will show the line, situation, and diameter of all their then mains and district mains.

XXXIX. The map, or a copy thereof, with the date expressed thereon of the last time when it was so corrected, shall be kept in the principal office of the gas company, and they shall deposit a copy thereof, certified by their secretary or clerk, by writing under his hand, to be a true copy thereof, with the respective clerks of the peace for the counties of Middlesex and Surrey, and the map or copy kept at the office shall be open to the inspection of all local authorities and consumers within the district, and their respective agents, and they respectively may take copies of or extracts from the same; and every gas company wilfully failing to comply with any of the requirements of this Act with respect to maps shall for every such offence forfeit not exceeding *ten pounds*.

XL. If and whenever it appears to the Metropolitan Board of Works that any of the provisions of this Act have been violated or not complied with on the part of any gas company, or that the gas company are acting in a manner unauthorized by law, and if it appear to the board that it would be for the public advantage that the gas company should be restrained from so acting, or compelled to do any act for remedying the wrongful Act done by them, the board may certify the same in writing to Her Majesty's Attorney-General, and thereupon he, if he be so advised, shall proceed by information, bill, or action, or other such proceeding at law or in equity, as the case requires, to restrain the wrongful acting or to compel the doing of the acts for remedying the wrongful acts; provided always, that the board shall not give the certificate except within *one year* after the committing of the offence specified in the certificate.

XLI. Provided, that the certificate shall not be given by the Board of Trade until *seven* days after they have given to the gas company, with respect to which they intend to give the certificate, notice in writing under the hand of the chairman of the board of their intention to give it, and specifying clearly the grounds of complaint on which the certificate is intended to be given.

XLII. In all cases in which the gas company are by Act of Parliament or otherwise authorized to cut off and take away the supply of gas from any premises, then, if the premises be unoccupied, their agents, servants, or workmen, after *twenty-four* hours previous notice in writing given by the gas company or any of their officers to the owner or his agent, by serving the notice on him, or if the owner or his agent be not resident within *seven* miles of the premises, or be not known to the gas company, by affixing the notice for *three* days on some conspicuous part of the premises, may enter into the same between the hours of *nine* in the forenoon and *four* in the afternoon, and remove and carry away any pipes or fittings or other works, being the property of the gas company, leaving the premises as secure as they found them, and repairing any damage caused by the removal.

XLIII. Every penalty imposed by this act, the recovery and application of which is not otherwise specially provided for by this Act, shall be recovered on summary conviction before a single police magistrate, and be enforced, accounted for, and paid to the receiver of the metropolitan police district, and shall be apportioned in the same manner as penalties or fines, other than fines upon drunken persons, or upon constables for misconduct, or for assaults upon police constables, are by the Act of the third year of Her present Majesty, for regulating police courts in the metropolis, directed to be recovered, enforced, accounted for, paid, and applied; and every order or conviction of any of the police magistrates in respect of any such penalty shall be subject to the like appeal, and upon the same terms, as is by that Act provided in respect of any order or conviction of any of the police magistrates; and every police magistrate by whom any order of conviction is made under this Act shall have the same power of binding over the witnesses examined, and the witnesses shall be entitled to the same allowance of expenses, as they would be entitled to in case the order, conviction, and appeal were made under that Act.

XLIV. All penalties by this Act imposed shall be recoverable according to the provisions of the Act of the twelfth year of Her present Majesty, chapter forty-three, for the administration of justice, save only that the same shall be recoverable only before a police magistrate.

XLV. Every police magistrate shall, for the purposes of this Act, have full jurisdiction and full powers and authorities over the parties respectively, and with respect to making orders on the parties respectively, and otherwise, and as to costs, and may issue every such summons, warrant, and other

process, and may take such other proceedings as he thinks requisite; and the service of any summons, notice, order, or other process in the matter on such person, or in such manner as a police magistrate directs, shall be good service thereof; and every police magistrate may proceed singly in the execution of this Act in such manner as he thinks proper.

XLVI. Except as provided by sections numbered thirty and thirty-one, none of the provisions of this Act shall apply to contracts made before the passing thereof.

XLVII. Nothing in this Act contained shall avoid, prejudice, or impair any of the powers now exercised by or vested in the Metropolitan Board of Works, or any powers now vested in any local authority within the metropolis, or any powers now exercised or possessed in respect of the manufacture or supply of gas within the metropolis by any railway company, or by any other person or persons making or supplying gas for his or their own use, and not making or supplying gas to the public as a trade or business.

XLVIII. Provided, that no special remedy or provision for giving relief to any person given by this Act shall prejudice or diminish the general jurisdiction of any of Her Majesty's superior courts of law or equity over or with respect to the Acts or defaults in respect of which the special remedies or provisions are so given.

XLIX. Every local authority may contribute towards the costs, charges, and expenses incurred, during the present or any preceding session, in and about the soliciting of this Act and the proceedings preliminary thereto, such a sum as the local authority think reasonable, and may confirm any payment or advance thereto made by the local authority for the purpose.

L. All the expenditure from time to time made or incurred by any local authority, under the authority or for any of the purposes of this Act, may and shall be defrayed by the local authority out of such of their funds as they think fit.

Legal Intelligence.

GLASGOW JURY COURT.—FIRST DIVISION.

WEDNESDAY, MARCH 28.

(*Before Lord* NEAVES *and a Jury.*)

ADAMSON *v.* THE WATER COMMISSIONERS OF GLASGOW.

Mr. GORDON and Mr. CLARK appeared for the pursuer; and Mr. M'FARLANE, Mr. FRAZER, and Mr. BURNETT for the defenders.

The pursuer was Mr. George Adamson, contractor, Leith Street, Edinburgh; the defenders were the Lord Provost, Magistrates, and Town Council of Glasgow, as Commissioners appointed under the Glasgow Corporation Water-Works' Act, 1855; and the issues sent to trial were the following:—

"It being admitted that the pursuer, in the months of April and May, 1856, entered into a contract with the defenders, whereby he undertook to execute that portion of the works of the defenders called the Mugdock Tunnel, and the works connected therewith: 1. Whether the pursuer, in entering into said contract, was, under essential error, induced by the misrepresentations of the defenders as to the work to be performed? 2. Whether, subsequent to the date of the said contract, the pursuer carried on works and provided implements and materials in execution of the said contract; and whether, on or about the 30th of December, 1857, the defenders took possession of the said implements and materials, or part thereof; and whether, in respect of the expenses incurred by the pursuer in the execution of the said works, and of the value of said implements and materials, the defenders are indebted to the pursuer in the sum of £4785. 1s., or any part thereof, with interest? and—3. Whether the pursuer superintended and took charge of the execution of said works; and whether, in respect thereof, the defenders are indebted to him in the sum of £830, or any part thereof, with interest from the 16th of February, 1858?"

Before proceeding to trial, the parties agreed to submit the first issue only to the jury, and that the questions involved in the second and third issues should be submitted to the arbitration of a scientific man, to be appointed before the close of the trial.

Mr. CLARK, in opening the case, stated that in April and May, 1856, a contract was entered into between the pursuer and the defenders for the execution of the Mugdock Tunnel, which was part of the great works for bringing the water of Lock Katrine into the city of Glasgow; and the present action was raised by the pursuer for the purpose of setting aside the contract, on the ground that it had been entered into by him under essential error as to the work to be performed, which essential error he alleged was induced by the misrepresentations made to him by the defenders. It appeared that on the 27th of February, 1856, an advertisement was inserted in the *Glasgow Herald* by the water commissioners, in which they intimated that they were ready to receive tenders for the execution of the Mugdock Tunnel and the Mugdock Reservoir, which at that time they proposed to take in one contract, and they intimated to intending offerers that the plans, sections, drawings, and specifications would be ready for inspection on the 5th of March following, and that copies of the specifications and quantities, with all the requisite information, would be obtained on application to Mr. Burnett, secretary to the commissioners; from Mr. Bateman, the engineer to the commissioners, at his office in Manchester; or frm Mr. Alfred Moore, the resident engineer, who, the advertisement stated, would accompany intending tenderers over the ground. Tenders for the contract were fixed to be delivered on or before the 25th of March, which was within a month from the date of the advertisement. This advertisement having come to the knowledge of the pursuer, he proceeded to Glasgow, where he saw Mr. Burnett, by whom he was referred to a certain office, where the plans, specifications, and schedules were ready for inspection. Of course, the intending contractor could not, in the short space of time allowed, ascertain for himself the nature of the underground work to be done, and he had therefore to trust to the specifications shown him. According to the section shown to Mr. Adamson of the work for the Mugdock Tunnel, he found that the length of the tunnel was 2640 yards, regarding which the specification stated, and the plan bore out the statement, that of the 2640 yards, 240 yards of the tunnelling were through whinstone, and 2400 yards were through red shale or blaes. Now, not only was there a vast difference between working through the hard substance of trap-rock or whinstone and the comparatively soft and workable substance shale, but the former was also attended with a great deal of pumping out of water, which was not the case with red shale which was nearly impervious to water. Mr. Adamson, acting on the faith of the plans shown him, made a tender for the tunnel and reservoir; but soon afterwards the comissioners changed their minds, and desired to make two contracts, and the pursuer accordingly tendered for the tunnel alone. The second tender was dated April 26, 1856, and it was accepted on May 19, the pursuer undertaking to execute the tunnel for £20,500, and to finish the work by May, 1859. Conceiving that he had tendered for a tunnel of 240 yards through whinstone, and the rest through shale, he set about the execution of the work as soon as he got possession of the ground, which was not till September; but instead of finding it as the defenders had represented, he found that the specification, plan, and schedule of quantities were entirely and essentially wrong. He proceeded to sink the shafts, the borings for which had represented the work to be in great part through shale, but he found the work, so far as he executed it, to be entirely through rock. In short, it just turned out to be the reverse of what he supposed—there was just about as much of shale cutting as there had been represented to be rock, and about as much rock cutting as there had been represented to be shale. In sinking the shafts, where he expected to find little or no water, he was overflowed by water, the boring being entirely through rock, so that, while the sinking of the shafts had been undertaken at £5, or £4. 10s. per yard, a part of the work cost him from £50 to £75 a yard. He went on with the work with the promise of having some addition to the sum contracted for, but even with that concession, which was held out to him to be only a matter of favour, he found it was a most ruinous concern. The result was, that he could not proceed with the contract but abandoned it, and the commissioners, while negotiations were yet on foot as to the terms on which the contract should be given up, suddenly took possession of the work and materials, and re-let the contract under the usual clause at the pursuer's risk. At the time this took place, Mr. Adamson had executed about £10,000 worth of the work, and the commissioners entered into a new contract with a Mr. Marshall to execute the remainder of the work for £18,970, giving him £8. 10s. for the rock cutting, whereas the utmost they would concede to Mr. Adamson was £6. 17s. 6d.; and for sinking the remainder of the shafts they gave him £15 per yard for one, and £10 for another, instead of £5 and £4. 10s. The whole sum Mr. Adamson had asked for making the four shafts, on the footing of the commissioners' plans being correct, was £852. 12s. 6d.; whereas, after he had executed a great portion of the work, the tender of Mr. Marshall for completing them was £1286. 13s. 4d.; and he (Mr. Clark) believed he was within the mark when he said, that out of the 2640 yards of tunnelling, there were, instead of 240 yards, about 2100 yards which had to be executed through trap rock. If, then, the jury found, as Mr. Adamson undertook to prove, that he had entered into this contract under substantial and essential error, caused by misrepresentations—not fraudulent misrepresentations, but representations made under some error, for which the defenders were responsible—they would have no difficulty in finding a verdict in his favour, which would enable him to get rid of this contract and of the liability which it had occasioned him.

Evidence was then called in support of the case, and Mr. *Adamson*, the pursuer, Mr. *David Landale*, mining and civil engineer, Glasgow, and Mr. *Neil Robson*, mining and civil engineer, Glasgow, were severally examined, and the case was adjourned till the following day.

THURSDAY, MARCH 29.

The evidence in support of the case was resumed this day, and Mr. *George Wilson*, contractor, Granton, Mr. *Burnett*, clerk to the commissioners, Mr. *Thomas Bouch*, C.E., Mr. *J. F. Dundas*, C.E., and other witnesses, were examined, and proved the facts set out in the speech of the learned counsel.

Mr. FRASER then opened the case for the commissioners, and in doing so, contended that the contract of which Mr. Adamson now sought to get rid, was, like many similar contracts for underground work, a speculative contract. It was one by which, had the strata proved more favourable, he might have made an enormous profit, and in accepting which, he was liable, should the strata prove to be less favourable than he expected, to the risk of considerable loss. It was a contract practically taken, just as a man took his wife "for better or for worse," a matter on which he must form his own judgment, and take his own chance. Had the strata turned out to be all sand and clay, he would have got all the benefit, and having turned out to be of hard rock, he must be content to take the loss. There was no fairer way of testing the case than by the jury asking themselves whether, in the event of circumstances having turned out the opposite way, the commissioners would have been entitled to get rid of the contract on the grouud of substantial error. It might be that the contractor had fallen into essential error; but that was all which the evidence adduced, had proved; but he had not succeeded in what it was necessary for him to show—viz., that he had been misled by the plans and sections which were shown him, or the representations which were made. He (Mr. Fraser) maintained, that the sections contained a true representation of all the information, which it was in the power of the commissioners to afford as to the stratification to be worked—that they took all the pains necessary to enable them to make a fair conjecture on the subject—and that he had been warned not to take it as anything more than fair conjecture. The section accurately showed the borings that had been made, and the extent to which they had been executed; and all beyond that, in the filling up of the sketch, the contractor knew to be quite conjectural. The section was a practical representation of the opinion which the commissioners had formed of the underlying strata, founded on the best data, and on observations made with more than usual care. The section was not shown to Mr. Adamson as an absolute guarantee of the nature of the strata, but only of what, from the fair result of the borings and observations made, he might expect to find; and he was free to form, and it was his duty to form, his own opinion on the subject; and, if he thought the information given him was either incorrect or insufficient, it was his duty to take means to verify or to extend the examination that had been made. The contract was entered into with the usual clause, that the commissioners "were not to be bound to make any allowance to the contractor for any supposed or real inaccuracy in the plans, sections, or drawings, of the accuracy of all which the contractor must satisfy himself before the day of letting." There had been an error in the accuracy of the section, but why should not that clause be enforced, in the circumstances, against the contractor? He contended that it was for the public interest that the commissioners should resist this claim; otherwise contractors taking speculative contracts would come against the party with whom they had contracted, in every case in which it turned out, that they had not made a profitable bargain.

Mr. *Hugh Maclure*, engineer and contractor; Mr. *James Henderson*, who made the borings; and Mr. *Alfred Moore*, resident engineer of the company, were then examined for the defence, and the case was further adjourned till the following day.

FRIDAY, MARCH 30.

At the sitting of the court this morning, Mr. *Alfred Moore* was cross-examined, and Mr. *Waddell*, contractor, was also called on behalf of the commissioners.

Mr. *Bateman*, the engineer of the Loch Katrine Works, was then examined. He said that he had personally inspected, and was intimately acquainted with, the whole geological features of the country through which the water-

works passed, including Mugdock Hill. The Mugdock Tunnel, which Mr Adamson had contracted for, was the longest on the line, but there were altogether 70 tunnels, and 15 miles of tunnelling on the line. The section shown to Mr. Adamson, and other intending contractors, was made up from the result of the bores which had been made, and from careful observation as to the character of the geological strata of the district. The bores made at both ends were carried down to the level of the tunnel, but the intermediate bores were only carried down through the stratum of whinstone, and stopped on reaching the shale, it being reasonable to assume that the bed of shale, which was tested at the extreme ends, went down to the level of the tunnel. The section showed the exact result of the borings, and the extent to which they had been made; and every practical person would at once see how far the strata was ascertained, and how far it was inferred, or was conjectural. The information given to the persons tendering was the best information which he possessed on the subject. They had not thought it necessary to give to the contractors the result of the borings made in any other than the Mugdock Tunnel contract, and for only one other tunnel had borings been made. The object of the borings here was to ascertain whether the trap rock was a whin dike lying on the spot on which it had been ejected from the bowels of the earth, or a mere floating mass that had covered all the original ground. There was a great difference in respect of hardness and consistency between floating trap and whinstone dike. In the present case, the bores led them to suppose that it was a floating mass of whinstone, and not a dike; but the bores made could not by any means detect whether there were not one or more dikes of whinstone to be cut through in the course of the excavation, and it must be entirely a matter of conjecture whether such dikes were to be met with. It was to be expected that Mr. Adamson would find water on sinking his shafts through the whinstone, but the quantity he met with was a mere bagatelle compared with what was often found. Mr. Adamson's arrangements for pumping, however, were utterly defective. In No. 2 shaft, for five months after May, 1857, Mr. Adamson only sunk 4 feet, and in the two succeeding months 11 feet 9 inches. Mr. Marshall, who succeeded him in the contract, by some alterations in the arrangement of the machinery, made it work well, and in a month he executed the 9 feet which remained to get to the bottom of the tunnel. In his opinion, it was to Mr. Adamson's advantage that the tunnel had to be worked through whin, which required no arching, rather than through shale, which required arching. According to the prices of his own contract, the proportion in his favour was six to seven.

Mr. *Bateman* was cross-examined at some length, and stated that he had also had to complain of delay in the case of the contractor who succeeded Mr. Adamson.

Mr. GORDON then addressed the jury for the pursuer, and Mr. MACFARLANE for the defender, after which the case was again adjourned.

SATURDAY, MARCH 31.

This morning Lord NEAVES summed up the case to the jury at considerable length. After some remarks to the effect that contracts for the execution of tunnelling or mining works necessarily involved considerable hazard to the contractor; that they ought, therefore, to be entered into with great deliberation, and with the requisite skill, caution, and acquaintance with the subject, his lordship said that no contractor was entitled to have his bargain broken merely because he had suffered loss, and that the pursuer ought not to be allowed to approach the jury with the mere allegation that he had entered into the contract under error, or even essential error, unless he could show that such error was induced by the misrepresentations of the defenders. This was the case that the pursuer was bound to make out, and they were not even here called upon to say that he was to get quit of his contract, but to say whether the error was a material and substantial one, and whether the defenders were responsible for it. From the evidence it appeared that the water commissioners of Glasgow advertised in the month of February, 1856, for contracts for the work in question. Mr. Adamson tendered in consequence, and his offer was accepted. The section which had been prepared for the guidance of contractors willing to tender for the work was prepared by Mr. Moore, the resident engineer, from the borings made by Mr. Henderson. Two of these bores were made at the extreme ends of the tunnel. The one at the north end had gone through whin to below the level of the tunnel, till it came on the top of some blae. The bore at the south end showed a different result; it went down to the tunnel, first through whin, and then through 38 feet of blae. These bores were a mile and a quarter apart, but some intermediate bores were made, one at shaft No. 3, and was only carried down to a certain extent, two or three feet into the bed of blae which lay underneath the layer of whinstone; for Mr. Moore, apparently with Mr. Bateman's approbation, said he thought it unnecessary to carry the bore further, because he believed that if he met blae, it would be a continuation of the same blae which was met with at the south end of the tunnel. Finally, in January, 1856, two additional bores were mades, and he (Lord Neaves) thought that for the long distance of a mile and and a quarter five bores were not more than was requisite to ascertain the character of the strata; and, in directing Henderson to make these bores, Mr. Moore, in his letter, added, "of course you need only go through the whin," following out the same idea entertained that below the whin this layer of blae extended down to the level of the tunnel. These bores, however, seemed to have been rather more hurriedly managed; and, apart from the circumstance that they were only carried through the whin to touch the stratum below, Mr. Moore was not on the spot, but in Manchester, at the time, and he did not see the stuff which was brought up by the borer. Now, the journal of the last two bores did not perfectly agree with the previous bores, which had terminated in red blae, for the material which Henderson recorded as having been found on going through the whin in the two last bores was red faix, which he (Lord Neaves) thought could not mean exactly the same thing as red blae, as had been too readily assumed, else a practical man like Henderson would not have given it a different name. 'Faix appeared to be a material of somewhat tougher consistency than blae, and had been described to be a kind of sandy blae; but the material thing was, that this stratum, which Henderson had recorded to be red faix, and which Mr. Moore in his section marked and coloured as red blae, turned out to be a migdoloidal trap. It turned out to be the beginning of another rock below the proper whinstone, and in itself a kind of whin, one of those igneous rocks which geologists attributed to volcanic action, as distinguished from stratified rocks, which are the slow deposits of time. It was unfortunate that Henderson had not represented this to be migdoloidal trap, for Mr. Moore said that, had he done so, he would have ordered him to go down further; but, trusting to Henderson's correctness, he acquiesced in his stopping there, and he put down on his section the stratum as red blae, Henderson having reported it be red faix. They could not find fault with Mr. Moore for having coloured the whole intermediate spaces of the plan, for the filling up of it was not mere imagination, but fair scientific probable inference as to the character of the strata, which had been tested by bores at certain fixed points, assuming, of course, that the plan represented the fair results of the bores, and their direction and extent. The plan in this condition would be quite intelligible to those intending to contract, and, though Mr. Adamson made a somewhat confused statement as the lines of the bores not being on the plan, he thought they had really no evidence that would in the slightest degree justify them in supposing that the lines were not there when Adamson saw the plan, but had been filled in afterwards—a statement which would have implied a fraud of the grossest description on the part of the defenders. Such being the case, it would be for the jury to consider how far this section constituted a representation by the commissioners to Adamson, and, if so, how far it was a misrepresentation. It could not, perhaps, be said that the commissioners undertook to show by it all that might be in the bowels of the earth at Mugdock Hill, or that they had guaranteed the strata to be as represented, any further than that that was a fair inference for the journal of the bores, assuming the bores to have been really made, and to have been correctly recorded; but the jury would consider whether, at least, it was not a statement to this extent—that red blaes or shale had been found at the foot of all these bores, whereas, in fact, they had come, not upon red blaes or shale, or even faix, as Henderson reported, but upon a migdoloidal trap. If that section represented that to be blaes which, in point of fact, was a migdoloidal trap, it would be for the jury to consider whether that was not a misrepresentation leading the pursuer into essential error. It must at the same time be kept in view that there was a clause in the contract which warned the contractor that he must satisfy himself of the accuracy of the plans, and that the defenders were not to be held responsible. That was a very important clause, and might perhaps cover considerable deviations in point of accuracy; but whether it went to exclude all complaint of fundamental error, was another matter. Had there been a difference of one or two hundred feet on either side, this clause would probably have had great force, but when, instead of 240 yards or thereby of whin tunnelling, and 2400 yards of shale tunnelling, the proportions turned out to be nearly the reverse, the jury would consider whether this was not a mere accidental error, but a fundamental and essential error. The evidence as to the relative prices of shale cutting and rock cutting was somewhat contradictory, the pursuer's witnesses estimating the whin as double the expense of the shale, even with arching; and the defenders' witnesses telling them that shale, with arching, was about the same, if not more expense, as rock cutting. But, independent of the difference of price, they would also have to consider whether it was not a different kind of contract; for even those who told them that the whin was cheaper, told them also that it was much slower. A man, also, might be willing to take a shale contract who knew little about the working of a whin contract. Mr. Bateman told them that Adamson had only put down the whin in his list of prices at £2 per yard, and that he had recommended and allowed him to alter it to £3; but Mr. Adamson's explanation was that as there was so little of the whin, and as it was near the end of the tunnel, he could afford to put it down at £2, by putting a heavier price on the shale. Besides, these prices were not fixed with the view to the ultimate payment of the contractor, but with a view to the interim payments made to him as the work advanced. Mr. Bateman also told them that when he saw these prices, the interference he drew was that he was a man who knew nothing of his business, otherwise he never would have imagined that he could work whin at £2 per yard, and he put it up to £3, which, after all, was far below the real price, for ultimately the commissioners agreed, *ex gratia*, to allow £6. 17s. 6d. Mr. Bateman's statements had much surprised him, because it appeared from that that he allowed a contract to be entered into with a man who did not know his business, and which was therefore likely to involve him in a ruinous loss. In his (Lord Neave's) opinion, parties who invited contracts for work ought not to take the lowest offer made because it was the lowest, and that if a man's offer proved that he knew nothing about his business, they should not take his offer at all, for the great risk was that he would break down, the work would be thrown back on their hands, and a serious dispute might be the result. His lordship concluded by asking the jury simply to return an answer, yes or no, to the question whether the pursuer had entered into the contract under essential error, induced by the representations of the defenders.

Mr. MACFARLANE took exception to his lordship's charge on the ground that he had not directed the jury that the saving clause in the contract barred the jury from returning a verdict for the pursuer, in respect of any inaccuracies which they might be of opinion were made in the section, specifications, &c.

Lord NEAVE said he could not direct the jury that, provided they were satisfied of the affirmative of the issue, they were barred by that clause from finding for the pursuer.

Mr. MACFARLANE also took exception to the charge of the judge, on the ground that he did not direct the jury, 1st, That, as fraud was not alleged against the defenders, they were not answerable for any inaccuracy in the plans, sections, or drawings, &c., the pursuer being bound to satisfy himself on the matter; 2nd, That, if the jury were satisfied in point of fact that the expense of executing the work in question through shale or blaes was, along with the requisite lining, not greater than the expense of executing the work through whin or trap-rock, there was, in point of fact, no essential error committed; and, 3rd, That, supposing the jury to be of opinion that there was inaccuracy in the plans, so far as they represented the bores at shafts 1 and 2 to have stopped at shale or blaes, in place of migdoloidal rock or trap, the defenders were not, under the contract between them and the pursuer, answerable for said inaccuracy, the pursuer being bound to satisfy himself on the subject.

Mr. Archibald Horne was appointed as referee in the case of the questions involved in the second and third issues, which had been withdrawn from the jury.

After an hour's absence, the jury unanimously found for the pursuer on the first issue, thus affirming that the contract was entered into by him under essential error, induced by the representations of the defenders.

Miscellaneous News.

SOUTH METROPOLITAN GASLIGHT AND COKE COMPANY.

The Half-Yearly Meeting of this Company was held on Wednesday, the 4th inst., at the London Tavern—T. B. SIMPSON, Esq., in the chair.

The minutes of the previous meeting having been read and confirmed,

The SECRETARY (Mr. Livesey) read the report of the directors, which was as follows:—

The directors, in making their usual half-yearly report to the proprietors, of the position and working of the establishment, have the pleasure to announce that, since the last meeting, the business of the company has progressed satisfactorily; the principal, and, indeed, the only matter of importance that has arisen, likely to affect

the interest of the company, is the Bill recently introduced into the House of Commons for "Regulating the Supply of Gas to the Metropolis;" in which there are many very objectionable clauses; but the directors do not anticipate that Parliament will sanction any measure of an oppressive or obnoxious character: and they have reason to hope that the clauses will be so modified as not to lessen this company's prosperity.

The rental for gas is increasing, and the amount received for the sale of coke, and other products, during the past half year, exceeds that for the same period immediately preceding.

The works continue in an efficient condition, and, beyond an outlay for additional purifiers, and an extension of the condensers, will not require any further alteration of importance.

The supply of gas to the public during the past winter has been ample in all parts of the district, and the weekly report of the chemical officer, with regard to its quality and purity, has been satisfactory.

In the account to be submitted to the meeting, it will be seen that the income derivable from gas, and other products, &c, for the half year to Dec. 31, last, amounts to £36,310. 1s. 8d.; and the expenditure for the same period to £25,615. 6s., leaving a balance of £10,694. 15s. 8d. to be appropriated at this meeting.

The directors recommend that out of this sum a dividend should be declared at the rate of 3 per cent. for the half year, with a bonus of 14s. per share, and that the balance should be carried to the credit of the reserve, and wear and tear accounts.

In accordance with the company's Act of Incorporation, one director and one auditor retire from office at this period—Joseph Lidwell Heathorn, Esq., as director, and George Coxhead, Esq., as auditor, will therefore retire; but these gentlemen being eligible, have offered themselves for re-election.

The directors, finally, have to report that they have agreed to purchase a small piece of freehold land adjoining the works, which will enable them to erect another gasholder, and make other extensions when required.

The CHAIRMAN: Gentlemen, with your consent, I will make the motion, which as usual is made from the chair, "That the report be received and entered upon the minutes." In doing so, I shall have occasion to make but very few remarks to you, because there is little to say in reference to the position of the company, beyond that which appears in the report itself. You are all aware that, in carrying on a concern of this sort, there must be a considerable number of incidents arising in the course of the half year calling for great attention and care on the part of your directors, and sometimes presenting difficultics to be overcome; but they are of such a nature, that you need not be troubled with them. Of course, if we met with anything which we could not ourselves satisfactorily carry out, we should at once call you together, and take your advice, as to what ought to be done. Such a necessity however, has not arisen; all these things have been met by the directors in an easy and ready manner, and have passed off satisfactorily. I do not know that I have anything to call your attention to, except it is the new bill which has been introduced into the House of Commons, for regulating the supply of gas to the metropolis. That bill contains many very objectionable clauses; but we feel certain, that the Legislature will never suffer it to pass in its present form. And I may say, that really the complaints made against the metropolitan gas companies generally, are of so trivial a nature, and have been so fully answered from time to time, that it appears to me, wonderful how it is that agitators can be found at all. I can speak for three of the companies on our side of the water, that we make it a point, whenever complaints are made by our consumers and customers, to attend to them immediately, and to rectify whatever is amiss as far as in our power. I am sure we never lose a moment when we hear a complaint, but send immediately to know the cause of it, and to remedy the evil. I am certain also that that is the case with two of the other companies; and as to the fourth, which is a company introduced by the agitators themselves, I believe they are approaching perfection, although, as is the case with all companies at first, they have many difficulties to contend with, and many trials to pass through which they cannot avoid. But, in answer to any complaints which may be made against them, we may say, "that company was brought in by yourselves, and perhaps in two or three years' time they will come to be like other companies, and be able to satisfy their customers with but few grounds of complaint against them." In this case it appears to be as it was with regard to the great strike among the mechanics some time ago, when, as you will recollect, there were a certain class of agitators who kept the ball up for a long while, until the eyes of the men were open to the delusions practised upon them, and they found that no benefit whatever was to be derived from continuing it. I believe we shall find that this bill will have very little effect upon us, for the Legislature will see that in its present form it cannot be carried out with propriety, and that it will be so altered as to give satisfaction to us and to the public at large. There is another matter to which I would just allude, and that is the Sale of Gas Act which was introduced by Lord Redesdale. I believe that Act will shortly come into operation. There have been great difficulties to contend with, but they seem to be in a fair way to be overcome; and, when the Act comes to be worked, the public will no doubt be satisfied with the result. The report just read refers to the purchase of a piece of land adjoining the works. We are in treaty for that piece of land, and I hope we shall be able to purchase it, as we shall be wanting a new gasholder, and we shall be able to erect it there without inconvenience, and with considerable benefit to the concern at large. I do not know that I have any other matter to speak of, and, as you are all men of business, I will not waste your time by any set speech, but content myself by moving the adoption of the report, and stating that I shall be happy to answer any inquiries which the proprietors may desire to put.

Mr. RHODES seconded the motion.

Mr. MALTBY: Is the bill referred to by you the one introduced into the House of Commons by Sir John Shelley?

The CHAIRMAN: It is.

Mr. MALTBY: I have looked through that bill, and have endeavoured to see in what respect our interests will clash with it, but I cannot find out. I have tried to discover what are the objectionable clauses, but have failed.

The CHAIRMAN: There is the question as to price and quality, and many other things which we cannot go into now.

Mr. MALTBY: I am upon a committee which is to sit to night to take that bill into consideration, and I should like to know what are the objectionable clauses.

The CHAIRMAN: I think it had better come before us in a more formal manner than it can do at the present moment.

Mr. RHODES: May I ask when the directors examined the register of shares, to which the seal of the company has just been affixed?

The CHAIRMAN: One of the directors went through the register on Monday last.

Mr. RHODES: As to the bill introduced into the House of Commons, I think the directors need not be afraid of meeting it in a fair, upright, and business-like way, and that there will be no difficulty in the House of Commons coming to a right conclusion upon it. I should like to ask whether the directors have had their attention called to the Lime-light Company which has been formed?

The SECRETARY: There is nothing to fear about that.

The CHAIRMAN: Of course, we are always open to opposition by any new light which may be discovered.

Mr. DREW: None of us have fainted at the thoughts of it at present.

Mr. HEATHORN: I quite agree with Mr. Rhodes that we ought to be awake to everything of the kind, and I hope the Legislature, in passing the new bill which has been referred to, will take this matter into consideration.

The motion was then put and carried.

The SECRETARY read the following statements of account:—

Dr. *Working the Establishment, for the Half Year to December 31, 1859.* *Cr.*

To amount paid for wages			£4,275	17	8	
Ditto for salaries			1,853	11	1	
Ditto for lamps and lighters			1,230	8	0	
Ditto for rent and taxes			449	9	11	
Ditto to directors and auditors			396	0	0	
Ditto for purifying			336	14	7	
Ditto for engine			401	8	5	
Ditto for sundries			1,252	11	2	
Ditto expended for coals used			11,345	18	2	
Ditto in relay of mains			1,910	16	11	
Ditto in service-pipes			418	19	6	
Ditto in fixing and refixing meters			1,039	2	5	
Ditto for general stores			326	0	11	
Ditto for repair of ovens and retorts			764	13	1	
Ditto allowed for sick and superannuation-fund			70	0	0	
Ditto of bad debts and allowances			143	14	2	
Balance			10 694	15	8	
			£36,310	1	8	

By gas rental to date—						
September 29		£9,902	0	6		
December 25		18,922	15	7		
					£28,824	16 1
Coke, breeze, &c.					6,847	14 7
Meter-rent, &c.					637	11 0
					£36,310	1 8

Dr. *Balances, to December 31, 1859.* *Cr.*

To capital			£152,000	0	0	
Wear and tear account			3,066	12	9	
Reserve-fund			2,909	6	11	
Unclaimed dividend			21	4	9	
Payments in advance			288	8	8	
Amount due to sundries			3,190	10	9	
Balance of working account			10,694	15	8	
			£172,161	19	6	

By amount expended on works						£122,767 15 11
Stock on hand—						
Coals		£3,692	11	6		
Retorts, &c.		1,050	3	0		
Main-pipes		1,767	3	3		
Service-pipes		269	19	5		
Meters, &c.		1,429	12	0		
General stores		421	2	8		
Coke, breeze, &c.		173	17	10		
					8,804	9 8
Amount due to the company—						
For gas		£20,866	19	7		
Coke, &c.		959	8	1		
Sundries		185	17	8		
Interest		212	16	3		
					22,225	1 7
Cash at bankers		£ 976	19	10		
Petty cash, &c.		70	2	6		
					1,047	2 4
Investment					17,317	10 0
					£172,161	19 6

The CHAIRMAN: I move, as a matter of form, "That the audited accounts, to the 31st of December last, be received and approved."

Mr. RHODES: I second the motion. I should like to ask in what way the £17,317 are invested?

The CHAIRMAN: There are Consols, £4781; East India Debentures, £6886; and Canadian Bonds, £5650.

The motion was put and carried unanimously.

The CHAIRMAN: I have now a pleasing duty to perform, and I hope the resolution I am about to submit will meet your approval. It is, "That a dividend of 3 per cent., with a bonus of 14s. per share, clear of income-tax, be now declared for the half year ending the 31st of December last, and that the same be made payable at the bankers of the company on and after the 13th inst."

The motion was carried unanimously.

The CHAIRMAN: There is one little matter to which I should like to call your attention. We are occasionally asked for donations to local charities, and, if you have no objection, we should be glad to have the opportunity of meeting such calls upon our liberality as a company. I think you have sufficient confidence in us to leave the matter in our discretion as to how your bounty should be distributed; and I would name a sum—say, that the directors be authorized to subscribe £50 to the local charities.

Mr. RHODES: I think, if we begin to subscribe to public charities, we

hardly know where it may end, and who we may please or offend, there being so many sects and societies in this metropolis. No doubt, each of these societies considers itself to be equally beneficial with its neighbours, and if we give to some and withhold from others, it will cause a feeling of dissatisfaction at our proceedings.

Mr. DREW: I may say that this view of the subject was regarded by the directors before they mentioned it to the meeting; but we thought it right, as other companies were doing it, that we should not be behind them.

The SECRETARY: I believe ours is the only company which does not subscribe to some one or other of the societies.

Mr. RHODES: Can you mention any companies which do subscribe?

Mr. DREW: Yes; the Phœnix, the Chartered, and the London, with which you are connected.

The CHAIRMAN: We have felt the difficulty, but we ask you to leave it to our discretion. Of course, it will be entirely for local purposes that we should apply the money. I will move, formally, that we be allowed to subscribe towards local charities such an amount as we think prudent and wise.

The motion having been seconded, was carried unanimously.

The retiring director, Mr. Heathorn, was re-elected.

Mr. HEATHORN: Gentlemen, I am very much obliged to you for this renewal of the confidence you originally placed in me. Be assured that I will give the same attention to your affairs that I have hitherto done. I feel a great interest in this concern; I have belonged to it from its commencement, and I hope to continue a proprietor as long as I live.

Mr. Coxhead was re-elected auditor, and returned thanks for the honour thereby done to him.

A vote of thanks to the chairman and directors, which was duly acknowledged, terminated the proceedings.

SHEFFIELD GAS COMPANY. At the West Riding Spring Sessions, held at Pontefract on Tuesday 3d of March, an appeal by the Sheffield Gas Company, against their assessment to the poor-rate, was to have been heard, but on the suggestion of the Chairman, the Honourable E. Lascelles, it was arranged to refer the whole matter, with power to the Arbitrator, if necessary, to state a case for the opinion of the Court of Queen's Bench as to the principle upon which the assessment should be based.

PRESENTATION OF A TESTIMONIAL TO MR. ROBERT DARNEY.—A handsome gold pencil-case was presented on Monday March 26th 1860, by the gas meter makers and fitters of the western district to Mr. Robert Darney, inspector of the Commercial Gas Company, Mr. Darney having accepted another situation. The occasion was embraced as affording a fitting opportunity to mark the respect in which he was held for kindness and urbanity by those associated with him in business. The pencil-case bears the following inscription. "Mr. Robert Darney, Commercial Gas Works, a mark of esteem and respect by the Meter Makers and fitters of the western district, 1860." Mr. Darney, in accepting it, made an appropriate reply, thanking the donors for their kindness and unexpected display of their good feeling towards him.

INSPECTORS OF GAS METERS.—The committee for accounts and general purposes of the county of Middlesex, were to have met on Monday April 2, for the purpose of selecting twelve candidates for the election by the Court of four as inpectors of gas-meters, under the Sale of Gas Act; but in consequence of its having been intimated that it is in contemplation by the Government to make some alteration in the Act, the selection has been deferred until further notice, so far as Middlesex is concerned. The salary o each of the four inspectors to be appointed will be £200 a year, and nearly three hundred applications were sent in to the committee; but by an order of the Court the selection was to be limited to twelve candidates. Among the candidates were officials connected with most of the gas companies, and also Mr. Ingall, the superintendent of the warming, ventilation, and gas apparatus of the two sessions' houses, and servant of the county of many years' standing. Necessarily this postponement has caused a good deal of disappointment amongst the candidates; but it is believed, that unless the Government introduce the amending Act before the 19th of April, or some definite understanding be come to upon the subject in the meantime, the Court will proceed on that day to the election of four inspectors. The following appointments have been made in the provinces:—

Armagh Borough	Robert Cochran.
Gloucester County	W. E. Williams.
Nottingham Borough	Reuben Young, (temporary.)

GAS IN NEW ZEALAND. Gas—and gas from the brown coal of Auckland—is no longer a matter of controversy. It is an undoubted fact; and after a trial of more than one kind of coal in Auckland, there can be no doubt that, though the Drury coal is not so "strong" for furnace purposes as English or Australian coal, it is fully equal to the average of both as a gas-yielding coal. To show how this experiment has been thus deciaively tried in Auckland, we must hark-back over that indefinite space of time—a few months. The receipt of one or two small samples of Drury coal, led to their being forwarded for analysis to Sydney This analysis led to a Sydney capitalist making an offer to establish gas-works for this city, provided he could obtain a suitable site. No sooner had he made this proposition, than our so-called "Progress" friends—whose movements always partake of the crawfish or the "porka-porka" character—became wonderfully solicitous for the health and wealth of the city:—in the first place, gas-works would poison us; in the next place, gas-works were sure to be so profitable that we ought never to allow "foreigners" to carry away the profits that legitimately belong to "native enterprise." So Mr. Huntley of Sydney,—the least like an adventurer we have met with,—was sent back by our Solons to the place from whence he came, and the city of Auckland was preserved from being "poisoned" by gas. Unhappily for the peace of these sleepy-hollow philosophers, the proprietors of the *New Zealander* had long been dissatisfied with "Belmont Sperms," "Price's patents," "Stearines," and every other kind of composite of tallow, wax, arsenic, and such other compounds, as means of providing artificial light. Just about this period, an "unfortunate forty-acre man," and his partner (Messrs. Slator and Greenacre) arrived with a locomotive steam-engine, and with prospectuses of "Bower's patent national coal-gas apparatus." The plans were examined, and an order for the apparatus sent home. In due course, it arrived. The works were erected, and, under the direction of Mr. Marks, a practical gas engineer, completed; with a very inferior sample of Drury coal, a very superior gas was obtained—a gas remarkably clear and white for a first trial, and remarkably free from all mephitic odours. Without entering here into the respective merits of "brown" and "black" coal, of New Zealand (so called) "lignite," and the (so called) "true coal" of Australia and the "old world," we may repeat that we have not the least doubt as to the value of our Auckland coal for gas purposes, and that we confidently expect, before long, to see our coal exported to the sister colonies for the manufacture of gas. We have the satisfaction of being able to report that our small experiment has created quite a ferment in the city; that it has worked marvellous conversions; that if our apparatus were of ten times its capacity, the proprietors of the *New Zealander* could make a very handsome profit from supplying their neighbours; that suddenly the scales have fallen from the eyes of the blind "progress" men who before sneered at the idea of "gas and gammon" in Auckland; and that—even as they have of late become enlightened as to the advantages of the Queen Street Wharf, Custom House Street Quay, and "the Intake"—so now they perceive that gas *is* preferable to "Belmonts" or "Paraffin." Thus the world goes round: thus individual enterprize puts to shame the excess of caution of the Solons of every community, who fancy themselves possessed of all the intellect of that community, but who have grave objections to take a single step in advance, if that step is likely to involve any present pecuniary sacrifice. "Bower's national coal-gas apparatus" we regard as one of the most useful inventions of the day. It combines both simplicity and efficiency in a remarkable degree. The mode of feeding the retort, by means of a screw, completely divests the manufacture of gas of its greatest source of nuisance—the raking out of the gas-exhausted coal:—this is now pushed out of the retort by each fresh charge, and, being conveyed into a reservoir of water, is at once extinguished, so preventing all nuisance from the mephitic fumes to be met with in the large works of the great Gas Companies at home. The "purifier" works admirably: we do not believe that in the best managed gas-works of the old country, a clearer or purer gas is made than is yielded by the Bower's apparatus we have erected here in Auckland. We trust that our example will be followed by other establishments where business has to be carried into the "far night," or that it will lead to a combined effort for the lighting of the City. Our experiment—if not the first, the largest and most complete ever tried in New Zealand—has been so satisfactory and successful that it ought to remove all fear of the manufacture of gas creating a nuisance or being prejudicial to health; while, as a question of economy and public security, the experience of the whole civilized world has long since proved the inestimable superiority of gas over every other available artificial light.—*New Zealander.*

Advertisements.

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Share List of Gas Companies.

(Directors and Managers of Gas-Works are earnestly requested to enable us to rectify the errors and fill up any omissions in the following List.)

The Companies whose names are printed in italic type are incorporated by Act of Parliament.

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£	**ENGLAND.**	£ s d	£ s d	£ s d
		Aberavon			
		Aberdare			
		Abergele			
		Aberystwith			
530	10	Abingdon	10 0 0	6 0 0 & Bns. of £3.	12 0 0
1050	10	*Accrington Gas & Water*	10 0 0		15 0 0
1050	10	Do., new shares	10 0 0		15 0 0
2100	5	Do., do.	5 0 0		7 10 0
2100	5	Do., do.	1 0 0		1 10 0
2100	2½	Do., do.	0 10 0		0 15 0
1000	5	Airdale (Limited)	5 0 0	8 0 0	7 10 0
200	5	Do., new shares	1 15 0	8 0 0	
24	75	Alcester	75 0 0	4 0 0	80 0 0
128	10	Aldborough (Lim.)	10 0 0	5 0 0	
1500	10	Aldershot (Lim.)			
300	6	Alfreton	6 0 0	5 0 0	5 10 0
		Alnwick			
		Alston Moor			
250	10	Alton	10 0 0	10 0 0	12 0 0
1600	5	Altrincham	5 0 0	6 0 0	6 0 0
		Amersham			
170	10	Ampthill	10 0 0	4 0 0	9 0 0
350	10	Andover	10 0 0	6 0 0	
358	5	Appleby	5 0 0	2 10 0	2 15 0
230	10½	Arundel	10 10 0	10 0 0	10 10 0
250	10	Ashbourne, Derby	10 0 0	6 0 0	13 10 0
292	5	Ashburton	5 0 0	5 0 0	
84	30	Ashby-de-la-Zouch	30 0 0	6 0 0	
700	10	Ashford (Limited), Kent	10 0 0	6 0 0	11 10 0
1600	30	*Ashton-und.-Lyne*	30 0 0	10 0 0	60 0 0
590	5	Atherstone	5 0 0	9 0 0	8 10 0
		Attleborough			
		Axminster			
200	20	Aylesbury	20 0 0	5 0 0	21 0 0
150	10	Aylsham (Lim.), Norfolk	10 0 0	5 0 0 & Bns. of 5s. per sh.	12 10 0
3093	10	*Bacup (Ross. Un.)*, ordinary	10 0 0	9 0 0	19 0 0
600	10	Do., preference	10 0 0	9 0 0	19 0 0
2597	10	Do., new issue	1 0 0		2 10 0
		Bakewell			
200	10	Baldock	10 0 0	5 0 0	10 0 0
1000	10	Banbury (Limited)	10 0 0	7 10 0	15 0 0
2150	10	*Bangor Gas & Wr.*	10 0 0	5 0 0	10 0 0
500	5	Barking, Essex	5 0 0	5 0 0	5 0 0
260	10	Barnard Castle	10 0 0	5 10 0	10 15 0
800	5	Barnet	5 0 0	6 0 0	5 10 0
		Barnsley £6000		7 10 0	
109	20	Barnstaple	20 0 0	7 10 0 & Bns. of 10s.	
1158	2	Barton-on-Humb.	2 0 0	5 0 0	2 0 0
120	25	Basingstoke	25 0 0	8 0 0	30 to 34
2500	16	*Bath*, A shares	16 0 0	8 0 0	} 37 10 0
2500	8	Do., B shares	8 0 0	7 0 0	} united
2500	10	Do., C shares	5 0 0	7 0 0	7 10 0
		Battle £2000		6 0 0	
56	26⅔	Bawtry	26 12 6	6 0 0	25 0 0
710	10	*Beccles Gas & Water*	10 0 0	2 10 0	
300	30	Bedford	25 0 0	4 0 0	20 0 0
350	10	Bedworth	10 0 0	7 0 0	11 10 0
300	3	Belford	3 0 0		1 10 0
		Bedale, Yorkshire			
350	10	Belper	10 0 0	10 0 0	14 0 0
		Beaminster			
1086	10	Berwick & Tweedmouth	10 0 0	7 0 0	12 10 0
		Bewdley			
330	10	Bideford	10 0 0	6 0 0	10 10 0
		Biggleswade			
200	10	Bicester	10 0 0	5 10 0	11 0 0
5000	5	*Bilston*	5 0 0	8 0 0	7 0 0
200	10	Bingham	10 0 0	4 0 0	
		Bingley £7400		4 0 0	
1200	80	*Birmingham*, A shares	80 0 0	10 0 0	130 to 135
400	8	Do., B shares	8 0 0	9 0 0	14 10 0
1300	40	Do., new shares	40 0 0	7 10 0	60 0 0
1200	40	Do., new shares	30 0 0	7 10 0	45 0 0
2400	50	*Birmingham & Staffordshire*	50 0 0	10 0 0	96 to 97
2400	25	Do., new shares	25 0 0	10 0 0	52 to 52½
7020	20	Do., do.	17 0 0	10 0 0	40 to 42
		Bishop's Auckland			
180	10	Bishop's Castle	10 0 0	5 0 0	10 0 0
230	10	Bishop's Stortford	10 0 0	5 0 0	10 0 0
6000	15	*Blackburn*	15 0 0	10 0 0	25 0 0
		Blandford			
		Blyth & Cowpen			
		Bognor			
100	10	Bolsover	10 0 0		10 0 0
3909	16½	*Bolton*	16 10 0	9 19 8	35 0 0
7466		Do., new shares	1 0 0		
800	10	*Boston*	10 0 0	8 10 0	
1200	10	Do., new shares		8 10 0	
		Boughton Blean			
193	10	Bourne	10 0 0	5 0 0	
160	10	Brackley	10 0 0	6 0 0	10 0 0
		Bradford, Wilts			
	25	*Bradford, Yorksh.*	25 0 0	10 0 0	49 0 0
		Brampton, Cumberland			
		Brandon, Suffolk			
579	10	Brecon (Limited)	10 0 0	8 0 0	14 0 0
		Bridge-end, Glamorganshire			
6000	5	*Brierly Hill*	5 0 0	4 0 0	5 2 6
		Brighouse			
2250	20	*Brighton*	20 0 0	6 0 0	17 to 19
1125	20	*Brighton*, new sh.	16 0 0	6 0 0	12 to 14
2471	20	*Brighton & Hove*	20 0 0	6 0 0	19 to 21
107	8	Do., new shares			
181250	Sk.	*Bristol United*	Stock.	9 0 0	181 to 183
150	8	Brixham	8 0 0	5 0 0	
		Braintree			
89700 *l*	Sk.	*Brentford*	All.	4 0 0	
1659	20	Do., preference	1 0 0	5 0 0	
		Brentwood			
200	50	*Bridgwater*	50 0 0	7 0 0	50 0 0
400	10	Bridlington	10 0 0	7 10 0	12 10 0
		Bridport			
		Brigg			
		Broadstairs			
		Bromsgrove			
1000	5	Bromley, Kent	5 0 0	7 0 0	
100	10	Bromyard (Lim.)	10 0 0		
		Broughton			
120	10	Bruton	10 0 0	4 0 0	8 to 9
		Brynmawr			
100	25	Buckingham	25 0 0	6 0 0	26 to 27
500	1	Burley-in-Wharfdale (Limited)	1 0 0	5 0 0	1 1 0
1600	5	*Burslem & Tunstall*	5 0 0	8 0 0	
2240	5	Do., new shares	5 0 0	6 0 0	
1200	10	*Bury St. Edmund's*	10 0 0	10 0 0	17 10 0
1800	10	Do., new shares	1 10 0	10 0 0	
303	10	Buxton (Limited)	10 0 0	7 10 0	14 0 0
150	10	Caistor	10 0 0	7 0 0	12 0 0
187	5	Callington	5 0 0		5 0 0
215	10	Calne, Wilts	10 0 0	6 0 0	10 0 0
		Camborne			
600	50	*Cambridge*	50 0 0	7 0 0	80 0 0
160	12½	Do., new shares	12 10 0	7 0 0	20 0 0
640	8½	Do., do.	4 0 0	7 0 0	6 0 0
240	50	*Canterbury Gas & Water*	50 0 0	£6 & Bns.	61 to 63
240	25	Do., do.	25 0 0	} Bns.	25 to 30
240	12½	Do., do.	12 10 0	} of	12½ to 15
240	6¼	Do., do.	6 5 0	£2.	6¼ to 7½
800	25	*Cardiff*, A shares	25 0 0	10 0 0	42 0 0
800	25	Do., B shares	25 0 0	8 0 0	38 0 0
160	25	Carmarthen	25 0 0	5 0 0	30 0 0
		Carnarvon			
		Carshalton			
200	6	Castlecary	6 0 0		5 0 0
200	10	Castle Donnington	10 0 0	6 0 0	12 14 0
249	5	Castleford	5 0 0	5 0 0	5 0 0
400	5	Castletown, Man.	5 0 0	5 0 0	5¼ to 5¾
620	2	Cawood (Limited)	2 0 0	4 0 0	
		Chatteris			
300	10	Cheadle	10 0 0	5 0 0	10 0 0
100	25	Chelmsford	25 0 0	5 0 0	40 0 0
100	25	Do., new shares	15 0 0	5 0 0	15 0 0
2500	16	*Cheltenham*, A shares	16 0 0	8 0 0	
2500	8	Do., B shares	8 0 0	7 0 0	
		Do., new shares		7 0 0	
500	10	*Chepstow*, A shares			
200	10	Do., B shares			
		Chertsey (*see* Co. & General, London)			
230	10	Chesham	10 0 0	5 0 0	10 10 0
30000 *l*	Sk.	*Chester United*	Stock.	5 0 0	100 0 0
20000 *l*	,,	Do.	,,	7 0 0	140 0 0
465	10	Do.	10 0 0	7 0 0	14 0 0
35	10	Do., new shares	2 10 0	7 0 0	3 10 0
500	10	Do., do.	0 10 0	7 0 0	0 14 0
250	5	Chester-le-Street	5 0 0	6 0 0	5 0 0
19200 *l*	Sk.	*Chesterfield Gas & Water*		5 0 0	
400	50	Do.	50 0 0	5 0 0	52 0 0
240	25	Chichester	25 0 0	6 0 0	30 0 0
		Chippenham			
329	10	Chipping Norton (Limited)	10 0 0	5 0 0	
100	10	Chipping Ongar	10 0 0	2 10 0	5 0 0
838	20	Chorley	20 0 0	7 0 0	27 0 0
200	5	Church Stretton (Limited)	5 0 0		
		Chowbent, Lancashire			
		Christchurch			
680	10	Cirencester	10 0 0	5 0 0	11 0 0
357	10	Cleckheaton, A shares	10 0 0	5 0 0	
357	10	Do., B shares	7 10 0	5 0 0	
350	10	Clevedon	10 0 0	4 10 0	10 0 0
		Clitheroe			
1132	5	Cockermouth	5 0 0	5 0 0	5 5 0
300	5	Coggeshall	5 0 0		4½ to 5
900	20	Colchester	20 0 0	7 0 0	24 0 0
160	10	Collingham (Lim.)	10 0 0	5 0 0	10 0 0
		Collumpton			
150	20	Colne, Lancashire	20 0 0	}	36 0 0
150	10	Do.	10 0 0		18 0 0
150	5	Do.	5 0 0	} £10	9 0 0
150	5	Do., A shares	5 0 0		9 0 0
150	5	Do., B shares	5 0 0		9 0 0
150	5	Do., C shares	2 0 0		5 0 0
		Coleford, Gloucest.			
200	25	*Congleton*	25 0 0	5 0 0	31 0 0
320	5	Conway (Limited)	5 0 0		5 0 0
1600	25	*Coventry*	25 0 0	8 0 0	35 0 0
	25	Do., new shares	25 0 0	7 10 0	
		Cowbridge			
		Corsham			
5000	10	Cowes	10 0 0	5 0 0	
200	10	Croft & Hurworth-upon-Tees (Lim.)	9 0 0		
1200	1	Crook (Limited)	1 0 0	10 0 0	1 5 0
251	5	Crowland	5 0 0	7 0 0	
181	10	Crowle, Lincoln	10 0 0	10 0 0	
4000	5	*Croydon Commercial*	5 0 0		
		Cranbrook. £1900		5 0 0	
		Crayford & Bexley			
420		Crediton	5 0 0	5 0 0	6 0 0
250	20	Dartford	20 0 0	7 0 0	28 0 0
700	5	Dartmouth (Lim.)	5 0 0	6 0 0	5 0 0
125	20	Daventry	20 0 0	6 0 0	24 8 0
165	10	Dawley	10 0 0	5 0 0	10 0 0
346	5	Dawlish	5 0 0	8 0 0	7 10 0
800	10	Deal & Walmer	10 0 0	7 10 0	10 0 0
1200	1	Deddington	1 0 0		
		Delph, Yorkshire			
500	6	Denbigh	6 0 0	5 0 0	6 0 0
1070	25	*Derby*	25 0 0	10 0 0	55 10 0
4000	5	*Dewsbury & Batley*	5 0 0	7 10 0	7 10 0
2000	5	Do., new shares	3 0 0	7 10 0	
7000	5	*Devonport*	5 0 0	8 0 0	8 0 0
		Dolgelly			
160	10	Donnington	10 0 0	5 0 0	10 0 0
340	25	Dorchester	25 0 0	8 0 0	27 0 0
120	25	Dorking	24 0 0	5 0 0	25 0 0
192	25	Douglas, Isle of Man	25 0 0	8 0 0	30 0 0
209	52½	*Dover*	52 10 0	10 0 0	80 0 0
500	10	Dowlais (Limited)	10 0 0	8 0 0	12 0 0
25	60	Downham Market	60 0 0	7 10 0	
		Driffield			
		Droitwich			
600	30	*Dudley*	30 0 0	6 6 0	37 to 40
500	20	Droylsden	10 0 0		
1500	20	*Dukinfield*	9 5 0	10 0 0	18 10 0
200	10	Dunmow	10 0 0	5 0 0	10 0 0
		Dunstable			
900	10	Durham	10 0 0	10 0 0	} £26
900	10	Do., new shares	5 10 0	10 0 0	}
250	10	Dursley, Gloster	9 0 0	11s. per share.	9 5 0
150	5	Easingwold	5 0 0	5 0 0	
400	10	Eastbourne	10 0 0	5 0 0	11 0 0
90	20	East Dereham	20 0 0	5 0 0	21 0 0
336	5	East Grinstead	5 0 0	6 0 0	5 0 0
1200	5	East Retford	5 0 0	10 0 0	7 10 0
		Egremont, Cumberland			
703	6¼	Elland	6 10 0	8 0 0	10 0 0
800	5	Elsecar (Limited)	5 0 0	5 0 0	5 12 0
		Eltham			
200	10	Emsworth			
400	5	Enfield	5 0 0	5 0 0	5 0 0
300	19	Epsom & Ewell	19 0 0		
		Eton (Cannel Gas)			
700	10	Evesham (Lim.)	10 0 0	6 0 0	9¼ to 10
1600	25	*Exeter*	25 0 0	8 0 0	40 to 42
250	10	Exmouth	10 0 0	5 0 0	5 10 0
58	25	Eye	25 0 0	5 0 0	25 0 0
170	10	Fairford	10 0 0	3 0 0	
100	38	Fareham	38 0 0	5 0 0	
120	25	Farnham	25 0 0	10 0 0	42 0 0
		Farringdon			
		Faversham			
120	10	Fenny Stratford (Limited)	10 0 0	5 0 0	11 0 0
	5	Filey	5 0 0	5 0 0	5 0 0
300	10	Folkestone	10 0 0	10 0 0	15 0 0
240	10	Do., new	8 0 0	10 0 0	13 0 0
280	5	Framlingham	5 0 0	5 0 0	5 10 0
1155	1	Frodsham (Lim.)	1 0 0	2 10 0	1 0 0
		Frome			
12000 *l*	Sk.	*Gainsborough*	All	6 0 0	110 to 115
400	20	Do., new shares	4 0 0	6 0 0	
170	10	Gillingham (Lim.), Dorset	10 0 0	3 0 0	
103	25	Glastonbury	25 0 0	4 0 0	15 0 0
		Glossop £10,000		9 0 0	
1000	25	*Gloucester*, A shares	25 0 0	10 0 0	30 to 32
856	6¼	Do., B shares	6 5 0	7 10 0	7¼ to 7½
621	5	Gomersal	5 0 0	6 0 0	6 7 6
260	20	Godalming	20 0 0	5 0 0	20 0 0
300	5	Do., new shares	5 0 0	5 0 0	5 0 0
100	20	Do., do.	8 0 0		
100	5	Do., do.	2 0 0		
		Gorleston & Southdown			
		Gosport			
450	20	Grantham	20 0 0	7 0 0	28 0 0
1000	20	Gravesend	20 0 0	5 0 0	21 0 0
		Grays Thurrock			
643	5	Great Berkhampstead	5 0 0	6 0 0	5 10 0
210	10	Great Marlow	10 0 0	5 0 0	10 0 0
700	5	Great Harwood	5 0 0	4 5 0	
280	5	Do., new shares	1 0 0		
450	5	Great Wigston	5 0 0	6 0 0	
150	1	Do., new shares	1 0 0	6 0 0	
1000	10	*Great Grimsby*	9 10 0	8 0 0	13 to 14
		Great Torrington			
352	25	*Guildford*, A shares	25 0 0		
352	3	Do., B shares	3 0 0		
		Do., new shares			
1300	10	Guernsey	9 0 0	16s. per share.	18 0 0
		Guisborough			
		Gunislake			
140	10	Hailsham	10 0 0	6 0 0	10 0 0
40	50	Halesowen	50 0 0	6 0 0	
900 *l*	Sk.	Halesworth		7 10 0	
300	5	Do., new shares	5 0 0	7 10 0	6 0 0
240	5	Haltwhistle (Lim.)	5 0 0	4 10 0	5 0 0
		Hampton			
1000	10	*Harrogate*	8 15 0	5 0 0	8 15 0
6800	5	*Hartlepool Gas & Water*	5 0 0	7 0 0	
3322	5	Do., new shares	5 0 0	7 0 0	
9878	5	Do., do.	1 10 0	7 0 0	

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£		£ s d	£ s d	£ s d
		Harwich			
662	6	Haslingden	6 0 0	10 0 0	10 0 0
343	6	Do., A shares	4 0 0	10 0 0	6 0 0
1120	25	*Hastings & St. Leonards*	25 0 0		
180	10	Hatfield			
500	5	Havant	5 0 0	3 0 0	5 0 0
120	10	Haverhill	10 0 0	5 0 0	10 0 0
244	5	Haworth	5 0 0		5 5 0
		Hay, Brecon			
4965	1	Hebden Bridge	1 0 0		
120	10	Hedon (Limited)	10 0 0	3 0 0	
145	12	Helston	12 0 0	9 0 0	
250	10	Hemel Hempstead	10 0 0	4 0 0	7 0 0
300	10	Henley (Limited)	10 0 0		
		Hereford. £10,000		4 10 0	
300	10	Herne Bay	10 0 0	6 0 0	11 0 0
		Hertford			
270	10	Hexham	10 0 0	6 0 0	14 0 0
400	25	*Heywood*	25 0 0	10 0 0	
	25	Do., new shares	25 0 0	7 10 0	
160	10	Higham Ferrers	10 0 0	7 0 0	12 0 0
520	5	High Wycombe	5 0 0	6 0 0	6 16 0
		Highworth, Wiltshire			
280	10	Hinckley	10 0 0	5 0 0	9 0 0
		Hindley, Lancashire			
200	20	Hitchin	20 0 0	8 0 0	
200	5	Do., new shares	5 0 0	8 0 0	
400	10	Hythe & Sandgate (Limited)	10 0 0	6 0 0	10 15 0
		Hoddesden			
555	20	*Holmfirth*	19 0 0	5 0 0	19 0 0
960	5	Holyhead	5 0 0	6 0 0	6 2 6
		Holywell (*see* British Provincial)			
98	25	Honiton	25 0 0	3 12 0	20 0 0
1250	1	Honley (Limited)	1 0 0	5 0 0	1 0 0
6	500	Horncastle	£500		
1200	2½	Horsforth	2 10 0		2 10 0
142	20	Horsham	20 0 0	10 0 0	25 0 0
	10	Houghton-le-Spg.	10 0 0	8 0 0	
		Howden			
		Hull-Sculcoates (*see* British Provincial)			
		Hull			
210	10	Hungerford	10 0 0	5 0 0	10 0 0
1450	20	Huddersfield	20 0 0	10 0 0	
250	20	Do., new shares	15 0 0	5 0 0	
860	10	Huntingdon and Godmanchester	10 0 0	4 0 0	10 0 0
600	10	Huyton & Roby	10 0 0	4 0 0	
2500	10	*Hyde*	9 0 0	5 10 0	10 15 0
		Idle & Eccleshill			
560	6¼	Ilkestone	6 5 0	11 4 0	*8 0 0
		Ilminster			
		Ilford			
198	12	Ilfracombe	12 0 0	4 0 0	8 to 9
		Ilkley			
		Ingatestone			
2800	10	*Ipswich*	10 0 0	8 0 0	15 to 16
		Ironbridge			
180	10	Irthlingborough	10 0 0	5 0 0	10 0 0
800	25	*Isle of Thanet* (Margate & Ramsgate.)	20 0 0	5 0 0	21 to 22
		Jersey, St. Helier's			
363	5	Kelvedon (Lim.)	5 0 0		
1842	9	*Kendal Union Gas & Water*	9 0 0	7 0 0	12 10 0
380	20	Do., preference	20 0 0	7 10 0	35 0 0
290	10	Kenilworth (Lim.)	10 0 0	4 0 0	10 0 0
400	5	Keswick	5 0 0	5 0 0	4 0 0
156	25	Kettering	25 0 0	6 0 0	30 0 0
		Keynsham			
		Kidderminster, £10,000.		5 0 0	
		Kidsgrove			
150	10	Kimbolton	10 0 0	7 0 0	12 0 0
140	7	Kingsbridge	7 0 0		10 to 11
		Kingston-on-Thames			
		Kington, Hereford			
		Kirby Lonsdale			
		Kirkburton			
330	5	Kirkham, Lancashire	5 0 0	4 0 0	5 0 0
330	2½	Do., new shares	2 10 0	4 0 0	2 10 0
200	10	Kirton-in-Lindsey (Limited)	10 0 0	5 0 0	10 10 0
200	5	Knighton	5 0 0		
1000	10	*Knottingley*			
470	31½	*Lancaster*	31 10 0	7 2 10	45 to 46
470	6 gs.	Do.	6 6 0	7 2 10	9 to 9½
564	15½	Do.	15 15 0	5 0 0	21 to 22
50	25	Langport	25 0 0	4 0 0	15 0 0
		Launceston			
1000	20	*Leamington Priors*	20 0 0	8 0 0	25 0 0
250	20	Do., new shares	15 0 0	5 0 0	17 0 0
213	10	Leatherhead	10 0 0	5 0 0	10 0 0
		Ledbury			
		Leeds Old Comp.—			
2412	25	Old shares	25 0 0	10 0 0	46 to 47
951	25	New do.	25 0 0	6 0 0	29 to 30
		Leeds New Comp.—			
45000 *l*		Old stock	£100	10 0 0	177½–182½
35000 *l*		New do.	£100	6 0 0	117–118
7795	6½	Do., shares	3 15 0	6 0 0	4½ to 4¾
3900	10	*Leicester*	10 0 0	8 0 0	16¼ to 16⅜
		Leigh			
	21	Leighton Buzzard	21 0 0	7 0 0	25 0 0
	10½	Do., new shares	10 10 0	7 0 0	12 10 0
400	10	Leominster	10 0 0	5 0 0	8 10 0
245	5	Leyburn, Yorkshire	5 0 0		6 0 0
330	25	Lewes, A shares	25 0 0	9 0 0	30 0 0
644	5	Do., B shares	5 0 0	9 0 0	6 0 0
		Leyland, Lancashire			
250	20	Lichfield	20 0 0	10 0 0	40 0 0
320	25	*Lincoln*	25 0 0	10 0 0 & Bns. of 12/6 per sh.	70 0 0
300	5	Lindfield (Limited)	5 0 0		5 0 0
240	5	Liskeard	5 0 0	8 0 0	6 0 0
240	5	Littlehampton	5 0 0	7 10 0	5 0 0
100		*Liverpool United*	£100	10 0 0	205 0 0
25		Do., ¼ share	25 0 0	10 0 0	51 5 0
		Llandudno Gas & Water			
		Llanelly . . £3000		5 0 0	
250	10	Llanrwst (Limited)	9 15 0	5 0 0	9 15 0
		London Comps.—			
5000	10	Anglo-Romano (*en commandite*)	10 0 0	8 0 0	10 to 11
5000	20	British Provincial	20 0 0	7 0 0	26 to 27
	20	Do., new	16 0 0	7 0 0	18 to 19
		(Norwich, Hull-Sculcoates, Shelton Potteries, Trowbridge, & Holywell.)			
12000	50	*Chartered*	50 0 0	8 0 0	60 to 62
6000	50	Do.	10 0 0	8 0 0	12 to 12½
10000	20	*City of London*, A shares	20 0 0	7 0 0	20 to 21
10000	10	Do., B shares	10 0 0	4 0 0	7 to 8
10000	25	*Commercial*	25 0 0	6 0 0	27 to 29
6000	25	Do., new shares	7 10 0	6 0 0	8 to 9
1180	5	County & General (Limited)	5 0 0	5 0 0	
		(Pembroke, Chertsey, Northfleet, Walton, & Lea Bridge.)			
4150	10	*Crystal Palace District*	10 0 0	6 0 0	11 0 0
		Do.	2 0 0	6 0 0	
4000	50	*Equitable*	50 0 0	6 0 0	53 to 55
23406	10	European (Lim.) (Boulogne, Amiens, Rouen, Caen, Havre, & Nantes.)	10 0 0	6 0 0	9½ to 10⅛
17216	10	*Great Central Gas Consumers'*	10 0 0	5 10 0	10 to 10½
13000	50	*Imperial*, old shares	50 0 0	9 0 0	74 to 75
13000	50	Do., new shares	17 10 0	9 0 0	29 to 30
1300	100	Do., bonds	£100	10 0 0	210 to 215
28000	50	*Imperial Continental* (Amsterdam, Berlin, Ghent, Hanover, Lille, Rotterdam, Aix-la-Chapelle, Antwp., Bordeaux, Brussels, Cologne, Frankfort-on-M., Haarlem, Marseilles, Toulouse, Vienna.)	43 5 0	7 0 0	47 to 49
3000	40	*Independent*	40 0 0	5 0 0 & Bns.	60 0 0
50000	1	Oriental (Limited), Calcutta	1 0 0		¾ to 1
50000	1	Do., new shares	0 15 0		⅝ to ¾
4904	50	*London*	50 0 0	3 0 0	35 to 40
5519	25	Do., 1st pref.	25 0 0	6 0 0	29 to 30
1921	50	Do., 2nd pref.	50 0 0	6 0 0	55 to 58
870	50	Do., 3rd pref.	50 0 0	6 0 0	53 to 56
20455 *l*		Do., 1st pref. sk		6 0 0	
13608 *l*		Do., 2nd pref. sk		6 0 0	
9000	60	*Phœniz*	52 0 0	7 0 0 & Bns.	60 to 62
5000	20	*Ratcliff*	16 0 0	5 0 0 & Bns.	16 0 0
4000	50	*South Metropolitan*	38 0 0	6 0 0 & Bns.	50 0 0
12633	10	*Surrey Consumers'*	10 0 0	8 0 0	11 0 0
2147	10	Do.	2 0 0	8 0 0	2 5 0
9000	50	United General (Dublin & Limerick)	50 0 0	2 0 0	22 to 23
1500	10	*Wandsworth & Putney*	10 0 0		
1500	10	Do., new shares			
20000	10	Western (Lim.), A shares	10 0 0	7 0 0	12 to 12½
10000	10	Do., B shares	1 0 0	7 0 0	2 to 2¼
2777	5	*West Ham*	5 0 0		
13223	5	Do., new shares			
10000	10	*Victoria Docks*			
		Long Buckby (L.)			
120	10	Long Sutton (Lim.)	10 0 0	7 10 0	11 to 12
250	5	Lostwithiel	5 0 0		6 0 0
250	1	Do.	1 0 0		1 0 0
		Loughborough			
240	25	*Louth*	25 0 0	10 0 0	
2500	10	*Lowestoft Gas & Water*			
		Llangollen			
611	5	Ludlow Union	5 0 0	5 0 0	5 to 5½
110	5	Do., pref. shares	5 0 0	5 0 0	
640	10	*Luton*	10 0 0		
640	5	Do., preferential	5 0 0		
640	5	Do., new shares	2 10 0		
100	20	Lutterworth	20 0 0	6 5 0	25 0 0
63	20	Lyme Regis	20 0 0	4 0 0	20 0 0
120	25	Lymington	25 0 0	5 0 0	25 0 0
		Macclesfd. £32,000			
300	10	Maidenhead	10 0 0	5 0 0	10 0 0
500	25	*Maidstone*, A shares	25 0 0	10 0 0	45 0 0
500	25	Do., B shares	25 0 0	4 0 0	20 0 0
	25	Do., new shares	25 0 0	7 10 0	
		Marlborough			
204	23	Maldon	23 0 0	7 0 0	27 0 0
200	10	Malmesbury	10 0 0	2 10 0	5 15 0
		Manningtree			
		Mansfield . £5000		10 0 0	
150	10	Mansfield Woodhouse	10 0 0		
		March			
		Margate (*see* Isle of Thanet)			
		Market Drayton			
132	25	Market Harboro'	25 0 0	7 0 0	35 0 0
		Market Weighton			
150	10	Marsden (Lim.)	10 0 0	5 0 0	10 0 0
370	10	Maryport	10 0 0	6 0 0	12 0 0
500	5	Matlock Baths	5 0 0		
200	2	Measham (Lim.)	1 12 6	5 0 0	
		Melksham			
934	2	Meltham	2 0 0	4 10 0	
		Melton Mowbray			
		Merthyr Tydvil			
50	10	Mere	10 0 0		
120	10	Middleham	10 0 0	5 0 0	10 0 0
3000	10	*Middleton*		10 0 0	
		Midsumr. Norton			
198	5	Mildenhall	5 0 0	5 0 0	
2000	5	Mirfield	5 0 0	5 0 0	6 5 0
700	10	Mitcham	10 0 0	10 0 0	14 10 0
650	5	Mold Gas & Water	5 0 0	7 10 0	6¼ to 6½
700	10	Monmouth Gas & Water	10 0 0	5 0 0	10 0 0
250	5	Montgomery (Ld.)	5 0 0		
150	10	Moreton-in-Marsh	9 2 6	4 0 0	9 2 6
1000	5	Morley, nr. Leeds	5 0 0	6 0 0	6 15 0
		Mossley			
		Mottram			
220	16	Morpeth	16 0 0	5 0 0	17 10 0
		Nantwich			
		Nayland			
		Neath			
185	10	Needham Market	10 0 0	4 0 0	
		Newark . . £5000		10 0 0	
250	20	Newbury	20 0 0	5 0 0	20 0 0
16000	8	Newcastle & Gateshead Union	8 0 0	6 0 0	8 10 0
		Newcastle-under-Lyne . . £6200		4 0 0	
250	5	Newent	5 0 0		
		Newhaven, Sussex			
		New Malton			
600	5	Newmarket	5 0 0	4 0 0	4 0 0
366	2	Do., preference	2 0 0	6 0 0	2 0 0
200	20	*New Mills & Hayfield*	15 10 0	5 0 0	
70	20	Newnham (Lim.)	20 0 0		21 0 0
		Newport Pagnell			
360	35	*Newport, Monmouth*, A sh.	35 0 0	9 0 0	50 0 0
540	35	Do., B shares	35 0 0	7 10 0	42 10 0
		Newport, Salop			
250	5	New Romney (Ld.)	5 0 0	5 0 0	5 0 0
		Newton Abbott			
198	10	Newtown, Montgomeryshire	10 0 0	6 0 0	10 0 0
		Northallerton			
777	20	*Northampton*, A shares	20 0 0	10 0 0	
777	20	Do., B shares	20 0 0	4 0 0	
777	20	Do., C shares	10 0 0	7 10 0	
		Northfleet (*see* Co. & General)			
2914	5	N. Shields, Tynemouth	5 0 0	5 0 0	5 17 6
120	10½	North Walsham	10 10 0	5 0 0	10 15 0
371	15	Northwich	15 0 0	5 0 0	15 0 0
		Norwich (*see* Brit. Provincial)			
4000	50	*Nottingham*	50 0 0	5 0 0	
	50	Do., new shares	50 0 0	10 0 0	
268	8	Nuneaton (Lim.)	8 0 0	5 0 0	7 10 0
125	8	Do.	8 0 0	5 0 0	7 10 0
		Oaken Gates, Salop			
240	5	Oakhampton (Ld.)	5 0 0		
200	10	Odiham	10 0 0	5 0 0	10 0 0
		Olney			
360	10	*Ormskirk*, old shares	10 0 0	8 0 0	14 0 0
1080	10	Do., new shares	4 10 0	8 0 0	6 4 6
1600	5	*Ossett & Horbury*	5 0 0	5 0 0	5 10 0
800	5	Do.	4 5 0	5 0 0	
		Otley, Yorkshire			
80	25	Oundle	25 0 0	7 0 0	25 0 0
		Over Darwen, £8000.		5 0 0	
1694	1	Over & Wharton (Limited)	1 0 0		1 2 0
120	150	*Oxford*	£150	8 0 0	230 0 0
		Padiham			
		Painswick			
		Pately Bridge, Yorkshire			
300	5	Peel, Isle of Man	5 0 0	7 0 0	6 to 7
		Pembroke (*see* Co. & General)			
500	20	*Peniston, Thurlstone, & Ozspring*			
250	20	Penrith	15 0 0	6 10 0	21 0 0
153	20	Penzance	20 0 0		15 0 0
200	10	Petworth	10 0 0	9 0 0	14 0 0
320	5	Petersfield	5 0 0	5 0 0	
		Pickering			
2500	10	*Plymouth & Stonehouse*	10 0 0	10 0 0	18 0 0
2500	10	Do.	8 0 0	7 10 0	11 0 0
160	10	Pocklington	10 0 0		5 0 0
		Ponder's End & Enfield Highway (Limited)			
		Pontefract			
		Pontypridd		4 0 0	
400	10	Poole	10 0 0	10 0 0	15 0 0
344	2	Do.	2 0 0	10 0 0	3 0 0
		Port Madoc			
600	53	*Portsea Island*	53 0 0	6 0 0	66 to 69
600	50	Do.	50 0 0	6 0 0	62 to 65
120	10	Potton, Bedfordshire	10 0 0	5 0 0	10 0 0
	10	Prescott	10 0 0	5 0 0	
		Presteign			
60000 *l*	Sk.	*Preston*	All.	10 0 0	200 0 0
3000	20	Do.	11 0 0	10 0 0	23 0 0

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£		£ s d	£ s d	£ s d
1000	10	Provincial	8 0 0		8 0 0
600	20	*Pudsey*	20 0 0	7 10 0	30 0 0
600	6¾	Do., new shares	4 13 4	7 10 0	4 13 4
93	20	Pwllheli	20 0 0	2 10 0	25 0 0
600	5	Quorndon & Mountsorrel	5 0 0	7 0 0	12 0 0
900	10	*Radcliff & Pilkington*, No. 1	10 0 0		
2100	10	Do., No. 2	6 0 0		
200	20	Ramsay, I. of Man	20 0 0	5 0 0	22 10 0
		Ramsgate (*see* Isle of Thanet)			
		Rawmarsh			
1019	10	*Reading*	10 0 0	6 0 0	9 0 0
500	20	*Reading Union*	20 0 0	7 10 0	21 0 0
400	5	Redcar	5 0 0		
		Redditch			
		Redruth			
		Reigate			
1200	1	Repton (Limited)	1 0 0	5 0 0	1 1 0
2000	10	Richmond, Surrey (Limited)	10 0 0	7 0 0	15 0 0
400	5	Rickmansworth	5 0 0		5 0 0
180	10	Ringwood	10 0 0	5 0 0	10 0 0
180	33¼	Ripon	33 10 0	4 10 0	
		Rochester & Chatham £20,000		6 0 0	
		Rochford			
		Romford			
		Romsey			
200	25	*Rotherham*, A shares	25 0 0	8 0 0	36 0 0
200	12½	Do., B shares	12 10 0	8 0 0	18 0 0
600	12½	Do., C shares	8 0 0	8 0 0	11 0 0
600	20½	Do., D shares	2 10 0	8 0 0	3 10 0
350	10	Royston	10 0 0	5 0 0	9 10 0
150	20	Rugby	20 0 0	10 0 0	
150	5	Do.	5 0 0	10 0 0	
150	6¾	Do.	6 13 4	10 0 0	
150	10	Do., new shares	10 0 0	10 0 0	
150	2½	Do., do.	2 10 0	10 0 0	
150	3¾	Do., do.	3 6 8	10 0 0	
430	10	Rugely	10 0 0	5 0 0	10 10 0
		Runcorn £11,000		7 10 0	
114	31¼	Ruthin	31 5 0	6 16 0	40 0 0
500	10	Ryde	10 0 0	6 0 0	12 0 0
		Rye			
		Saddleworth			
225	22	Saffron Walden	22 0 0	4 0	16 to 18
1400	5	St. Alban's Gas & Water (Limited)	5 0 0	5 0 0	5 5 0
		St. Austel			
320	5	St. Asaph (Lim.)	5 0 0		
		St. Colomb			
3000	10	*St. Helen's*	10 0 0	10 0 0	
		St. Ives', Cornwall			
180	10	St. Neot's	10 0 0	8 0 0	12 0 0
400	25	Salisbury	25 0 0	6 0 0	28 0 0
		Sandbach			
381	10	Sandwich	10 0 0	5 0 0	9 10 0
100	10	Saxmundham	10 0 0	5 0 0	
2000	10	*Scarborough*	10 0 0	10 0 0	18 0 0
	10	Do., preference	10 0 0	6 0 0	
240	5	Sedburgh	5 0 0		
300	16	Selby	16 0 0	5 0 0	
140	5	Settle (Limited)	3 10 0	5 0 0	
290	10	Sevenoaks	10 0 0	4 0 0	10 0 0
300	10	Shaftesbury (Lim.)	10 0 0	5 0 0	8½ to 9
565	5	Sheepshed (Lim.)	5 0 0	6 0 0	6 0 0
135000	Sk.	*Sheffield United*, A shares	All.	10 0 0	192 0 0
39264	Sk.	Do., B shares	All.	8 0 0	162 0 0
4800	16g.	Do., D shares	9 0 0	8 0 0	8 7 6
1600	6 gs.	Do., E shares	3 7 6	8 0 0	3 2 6
600	5	Shefford (Limited)	4 0 0		
		Shelton, Potteries (*see* Brit Prov.)			
350	10	Shepton Mallet	10 0 0	7 10 0	10 0 0
800	5	Sherborne	5 0 0	7 10 0	5 0 0
		Shirley & Freemtle			
240	25	Shotley Bridge (Limited)	25 0 0	7 0 0	30 0 0
240	10	Do., new shares	10 0 0	7 0 0	12 0 0
150	10	Somerton	10 0 0		
2000	10	*South Shields*	10 0 0	7 0 0	10 11 6
		Shiffnal, Salop			
1000	5	*Shipley*	5 0 0	6 0 0	7 10 0
150	10	Shipston-on-Stour	10 0 0	4 0 0	
1000	10	*Shrewsbury*, A sh	10 0 0	10 0 0	22 0 0
1000	10	Do., B shares	10 0 0	5 0 0	11 0 0
530	10	Do., new shares	10 0 0	7 10 0	15 0 0
400	15	Skipton	15 0 0	5 0 0	18 0 0
400	2½	Do., new shares	2 10 0	5 0 0	3 0 0
250	20	Sleaford	20 0 0	5 0 0	20 0 0
250	10	Slough	10 0 0		
340	5	Snaith	5 0 0		4 0 0
		Soham			
354	5	Southam	5 0 0		
		Southend, Essex			
300	5	Southwold	5 0 0	5 0 0	5 9 0
220	10	South Molton	10 0 0	5 10 0	7 10 0
1000	50	*Southampton*	50 0 0	6 0 0	
248	10	Southwell (Lim.)	10 0 0	5 0 0	11 to 11½
		Sowerby, Yorkshire			
1470	1	Spennymoor (Ld.)	1 0 0		
		Spittal, Berwick-on-Tweed			
400	5	Spilsby	5 0 0		
178	5	Staindrop	5 0 0	6 0 0	5 0 0
2000	6¾	*Stafford*	6 13 4	6 10 0	10 0 0
2000	6¾	Do., new shares	4 0 0	6 10 0	
248	25	Staines & Egham	25 0 0	6 0 0	26 to 27
		Staley Bridge, £15,000		10 0 0	
225	50	*Stamford & St. Martin's*	50 0 0	8 0 0	45 to 50
150	10	Staveley (Limited)	10 0 0	5 0 0	11 10 0
300	5	Stevenage	5 0 0	5 0 0	5 0 0
2000	10	*Stoke Fenton & Longton*	10 0 0	7 0 0	12 0 0
400	5	Stone, Stafford	5 0 0	5 0 0	6 0 0
220	10	Stoney Stratford	10 0 0	4 10 0	9 0 0
		Stourbridge, £5000			
150	20	*Stratford-on-Avon*	20 0 0	8 0 0	34 0 0
150	5	Do., new shares	5 0 0	8 0 0	8 10 0
750	5	Stretford	5 0 0	6 0 0	5 0 0
		Stroud			
169	10	Swaffham	10 0 0	5 0 0	7 0 0
		Swansea £9000			
261	20	Sudbury	20 0 0	5 0 0	20 0 0
18120	5	*Sunderland*	5 0 0	7 10 0	7½ to 7¾
1000	5	Do., new shares	5 0 0	7 10 0	
200	10	Sutton Coldfield, (Limited)	10 0 0		10 0 0
		Sutton, Surrey			
350	10	Sutton-in-Ashfield	10 0 0	7 10 0	12 10 0
		Sutton Southcoates & Drypool, Hull	20 0 0		23 to 24
200	10	Swineshead (Lim.)	10 0 0	5 0 0	10 5 0
		Swindon			
180	10	Syston	10 0 0		10 0 0
2800	5	*Taunton*	5 0 0	6 0 0	6 0 0
2800	1½	Do., new shares	1 10 0	6 0 0	
276	5	Tadcaster	5 0 0	5 0 0	3 0 0
		Tamworth			
		Tavistock			
200	5	Tenbury Union	5 0 0	5 0 0	5½ to 6
		Tenby			
150	10	Tenterden	10 0 0	4 0 0	8 0 0
		Tetbury, Gloster			
		Tewkesbury			
200	10	Thame	10 0 0	5 0 0	10 0 0
250	10	Thetford	10 0 0	6 0 0	10 to 11
150	10	Thornbury (Lim.)	10 0 0	4 0 0	
80	1	Do., new shares	1 0 0	4 0 0	
356	5	Thorne	5 0 0		4 0 0
160	10	Thrapston (Lim.)	10 0 0	5 0 0	10 0 0
1885	5	Todmorden (Lim.)	5 0 0	10 0 0	8 to 9
600	2½	Topsham (Lim.)	2 10 0	5 0 0	
		Torpoint (Lim.)			
		Torquay			
		Torrington, Devon			
		Totnes			
		Totnes Consumers'			
4000	5	*Tottenham & Edmonton*	3 15 0	8 0 0	4 0 0
150	10	Towcester	10 0 0	5 0 0	10 0 0
		Town-Malling			
275	10	Tring	10 0 0	5 0 0	10 0 0
		Trowbridge (*see* Brit. Prov.)			
320	25	Truro	25 0 0	7 0 0	
		Tunbridge			
		Tunbridge Wells			
100	10	Tuxford	10 0 0	5 0 0	12 0 0
600	5	Tyldesley (Lim.)	5 0 0	7 10 0	7 0 0
		Ulverston			
		Uppingham			
240	5	Upton-on-Severn	5 0 0	5 0 0	5 0 0
310	5	Usk (Limited)	5 0 0	7 0 0	6 0 0
250	10	Uttoxeter	10 0 0	5 0 0	11 to 12½
		Uxbridge			
586	10	Ditto & Hillingdon Consumers'	10 0 0		
		Ventnor			
160	10	Wainfleet (Lim.)	10 0 0		8 0 0
1000	25	*Wakefield*	25 0 0	10 0 0	40 0 0
3660	5	Do.,	5 0 0	10 0 0	8 0 0
1732	5	Do., new shares	5 0 0	7 10 0	
300	10	Wallingford	10 0 0	5 0 0	8 0 0
200	10	Wantage	9 0 0	5 0 0	10 10 0
900	20	*Warrington*	20 0 0	9 5 0	
900	20	Do., new shares	13 0 0	9 5 0	
100	10	Wareham	10 0 0	3 10 0	8 0 0
2000	1	Warkworth and Amble	1 0 0	3 10 0	
160	25	Warminster	25 0 0	6 0 0	28 0 0
		Warth			
		Warwick £15,000		6 0 0	
		Watford			
400	10	Weedon (Limited)	10 0 0	8 10 0	15 0 0
400	3	Do., new shares	1 10 0	8 10 0	2 5 0
111	25	Welchpool, Montg.	25 0 0	5 0 0	25 0 0
		Wellingborough			
300	10	Wellington, Salop	10 0 0	7 10 0	12 0 0
		Wellington, Som.			
160	25	*Wells*, Somerset	5 0 0	10 0 0	
160	10	Westbury	10 0 0		
		West Cowes			
225	10	Westerham (Lim.)	10 0 0	5 0 0	11 0 0
454	5	West Malling	5 0 0		3 4 0
400	20	*Weston-super-Mare*	20 0 0	6 10 0	
200	5	Wetherby	5 0 0		1 10 0
2000	10	*Weymouth*			
2300	1	Whitchurch, Hants (Limited)	0 10 0	2 10 0	
400	25	Whitehaven	25 0 0	2 0 0	14½ to 15
		Whitehaven New			
		Whitstable			
250	10	Whittlesea	10 0 0	5 0 0	11 0 0
300	10	Whitwick & Coalvle	10 0 0		10 0 0
1216	10	*Wigan*	10 0 0	10 0 0	22 0 0
400	5	Wigston	5 0 0	6 0 0	5 0 0
		Wigton, Cumberland			
1020	5	*Willenhall*, A sh	5 0 0		
1020	5*s*.	Do., B shares	2 14 0	5 0 0	
		Do., new shares			
		Wilton			
240	10	Wimborne Minster	10 0 0		
600	10	Wimbledon	8 0 0		8 0 0
130	10	Wincanton	10 0 0	7 0 0	
380	50	Winchester	50 0 0	5 0 0	50 0 0
1000	20	Windsor (Limited)	20 0 0	7 10 0	25 0 0
141	10	Winslow	10 0 0	6 0 0	10 0 0
120	10	Winterton (Lim.)	10 0 0	5 0 0	
120	5	Do., new shares	5 0 0	5 0 0	
200	10	Wirksworth	10 0 0	5 0 0	10 0 0
		Wisbeach			
		Witham			
		Witney			
400	5	Wivelliscombe (Ld.)	5 0 0	6 0 0	5 5 0
200	10	Woburn	10 0 0	5 0 0	11 0 0
210	10	Wokingham	10 0 0	5 0 0	
4448	10	*Wolverhampton*	10 0 0	10 0 0	19 10 0
4448	10	Do., new shares	6 0 0	10 0 0	13 7 6
		Woohouses			
660	2½	Woodstock	2 10 0	5 0 0	
200	7	Wooler	7 0 0		
270	12	Wotton-un.-Edge	12 0 0	4 0 0	7 0 0
2400	10	*Worcester*	10 0 0	7 0 0	14 0 0
550	10	Woodbridge (Lim.)	10 0 0		
600	10	*Worksop*	10 0 0	5 0 0	
600	5	Do., new shares	5 0 0	5 0 0	
		Worthing			
600	5	Wrexham, A shares	5 0 0	7 10 0	5 0 0
600	5	Do., B shares	5 0 0	5 0 0	5 0 0
600	5	Do., C shares	3 10 0	5 0 0	3 10 0
		Woolwich Consumers			
		Woolwich Equitable			
		Wye, Kent			
		Wymondham			
795	20	Yarmouth	20 0 0	5 0 0	18 to 20
1675	4	Yeadon, nr. Leeds	4 0 0	6 5 0	4 5 0
140	30	Yeovil	30 0 0	6 0 0	30 0 0
140	10	Do., new shares	10 0 0	6 0 0	10 0 0
12000	5	*York United*	5 0 0	8 0 0	9 0 0
3000	5	Do., new shares	1 0 0	8 0 0	3 0 0
		SCOTLAND.			
26000	2½	Aberdeen	2 10 0	10 0 0	5 1 0
500	10	Airdrie	10 0 0	9 0 0	14 10 0
		Alloa			
600	5	Annan	5 0 0	5 0 0	5 0 0
1600	1	Anstruther & Celardyke	1 0 0	8 0 0	1 6 0
100	20	Ardrossan	20 0 0	5 0 0	20 0 0
825	20	Arbroath	20 0 0	7 10 0	31 0 0
658	1	Auchinleck	1 0 0		
381	5	Auchterarder	5 0 0	7 10 0	7 10 0
750	2	Auchtermuchty	2 0 0	6 0 0	2 10 0
2666	5	Ayr	5 0 0	6 0 0	6 0 0
3000	2	Ayr & Newton Consumers	2 0 0	6 0 0	2 0 0
300	10	Banff	10 0 0	6 0 0	11 0 0
		Barrhead			
		Bathgate			
		Beith			
976	1	Bervie	1 0 0	5 0 0	
		Biggar			
739	5	Blairgowrie	5 0 0	8 0 0	7 0 0
		Borrowstowness			
540	5	Brechin	5 0 0	9 0 0	9 15 0
		Bridge of Allan			
2272	£2	Broughty Ferry	2 0 0	7 10 0	2 7 6
		Campbelton			
250	4	Carluke, Lanark	4 0 0	7 10 0	4 0 0
		Clackmannan			
1666	3	Coatbridge	3 0 0	10 0 0	4 5 0
200	5	Coldstream	5 0 0	6 0 0	5 0 0
		Collinsburgh			
1000	1	Comrie	1 14 8	4 10 0	1 14 8
2744	1	Crieff	1 0 0	10 0 0	1 15 0
1200	1	Crail, Fife	1 0 0	5 0 0	1 0 0
600	1	Cullen	1 0 0	5 0 0	0 15 0
280	2½	Cumbernauld	2 10 0	5 0 0	2 10 0
200	5	Cumnock	5 0 0	6 0 0	6 0 0
600	5	Cupar Angus	5 0 0	7 0 0	6 10 0
250	15	Cupar Fife	10 0 0	10 0 0	18 10 0
300	10	Dalkeith	10 0 0	7 10 0	20 10 0
750	2	Denny	2 0 0	6 5 0	2 5 0
	5	Dornoch			
500	1	Douglas	1 0 0	6 0 0	1 2 0
		Dufftown			
		Dumbarton			
400	20	Dumfries	14 0 0	7 2 10	14 10 0
391	5	Dunbar	5 0 0	6 0 0	5 10 0
		Dunblane			
1250	25	*Dundee*	23 15 0	8 15 9	50 0 0
8000	5	*Dundee, New*	5 0 0	4 10 0	5 5 0
860	10	Dunfermline	10 0 0	7 10 0	16 10 0
		Dunkeld			
1750	2	Dunoon	2 0 0	6 0 0	2 3 0
		Dunse			
250	5	Dysart	5 0 0	7 10 0	6 10 0
2327	1	East Wemyss	1 0 0	6 0 0	1 2 0
6000	25	*Edinburgh*	25 0 0	10 0 0	54 0 0
6400	25	*Edinburgh & Leith*	25 0 0	10 0 0	53 0 0
621	12	Elgin	12 0 0	6 0 0	13 0 0
		Elie			
	14	Falkirk	14 0 0	7 0 0	14 0 0
		Falkirk, New			
632	2	Falkland	2 0 0	5 0 0	2 0 0
2000	1	Ferry Porton Craig	1 0 0	6 5 0	1 3 0
581	1	Fochabers	1 0 0	5 0 0	1 2 0
1440	5	Forfar	5 0 0	7 10 0	7 12 6
360	5	Do., new shares	2 10 0	7 10 0	6 10 0
		Fort William			
2000	1	Fraserburgh	0 16 0	5 0 0	0 18 0
500	5	Galashiels	5 0 0	10 0 0	9 10 0
		Gatehouse, near Fleet			
900	2½	Girvan	2 10 0	6 0 0	2 10 0
5200	25	*Glasgow*	25 0 0	10 0 0	47 10 0
3200	6¾	Do.	6 5 0	10 0 0	11 17 6
15000	10	*Glasgow City & Suburban*	10 0 0	10 0 0	19 7 6
		Grangemouth			
		Grahamston			
		Haddington			
		Hamilton			
	5	*Hamilton, New*	5 0 0	4 10 0	6 0 0
440	5	Hawick	5 0 0	7 10 0	7 10 0
300	5	Helensburgh	5 0 0	7 10 0	7 10 0
1312	1	Huntly	1 0 0	7 10 0	1 5 0
250	5	Inverary	5 0 0	10 0 0	6 12 6
425	1	Inverkeithing	1 0 0	8 0 0	1 0 0
1200	10	*Inverness Gas & Water*	10 0 0	7 0 0	14 0 0
2400	5	Do., new shares	1 5 0	7 0 0	2 0 0

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£		£ s d	£ s d	£ s d
	10	Irvine	10 0 0	10 0 0	14 0 0
	2½	Do.	2 10 0	10 0 0	3 12 6
300	5	Jedburgh	5 0 0	7 10 0	7 10 0
		Johnstone, Paisley			
		Keith			
600	5	Kelso	5 0 0	10 0 0	10 10 0
620	2	Kelsyth	2 0 0	5 0 0	2 0 0
600	25	Kilmarnock	25 0 0	7 10 0	30 0 0
600	25	Do., new shares	7 10 0	7 10 0	
334	5	Kincardine	5 0 0	5 0 0	4 10 0
		Kinghorn			
		Kingskettle, Fife			
		Kinross			
1200	5	Kircaldy	5 0 0	10 0 0	10 10 0
320	5	Kircudbright	5 0 0	5 0 0	5 0 0
997	3	Kirkintulloch, nr. Glasgow	3 0 0	6 13 4	3 7 0
		Kirkwall			
		Kirriemuir			
		Lanark			
		Largo, near Leven			
280	8	Largs	8 0 0	7 10 0	8 10 0
1309	1	Lasswade, near Edinburgh	1 0 0		
177	5	Lauder	5 0 0	5 0 0	5 0 0
2000	1	Leslie, Fife	1 0 0	7 10 0	1 5 0
618	1	Lesmahago	1 0 0	6 0 0	1 0 0
1800	1	Leven	1 0 0	7 10 0	23s. to 25s.
100	10	Linlithgow	10 0 0	10 0 0	19 0 0
		Linton			
		Lochee, n. Dundee			
434	5	Lochgilphead (Ld.)	5 0 0	7 0 0	5 10 0
380	5	Lochwinnock, nr. Paisley	5 0 0	3 10 0	4 0 0
1200	1	Markinch, Paisley	1 0 0	8 0 0	1 5 0
282	3	Mauchline	3 0 0	5 0 0	3 0 0
		Maxwell Town, n. Dumfries			
423	5	Maybole, Ayrshire	5 0 0	4 10 0	5 0 0
		Maryhill, n. Glasg.			
373	2	Melrose	2 0 0	7 10 0	2 10 0
718	2	Mid & East Calder	2 0 0		2 0 0
200	5	Moffat	5 0 0	5 0 0	
120	24	Do.	2 10 0	5 0 0	
400	20	Montrose	20 0 0	10 0 0	35 0 0
800	5	Musselburgh	5 0 0	10 0 0	9 10 0
618	1	Nairn	1 0 0	5 0 0	1 0 0
		Neilston, n. Glasgow			
1200	1	Newmilns, near Kilmarnock	1 0 0	7 10 0	1 2 0
300	5	Newburgh, Fife	5 0 0	8 0 0	7 0 0
300	1	Do., new shares	1 0 0	8 0 0	
		Newton-on-Ayre			
107	14½	Newton Stewart	14 10 0	5 0 0	14 10 0
300	5	N. Berwick, N.B.	5 0 0	5 0 0	7 10 0
		N. Queensferry			
245	5	Oban	5 0 0	7 10 0	5 7 6
1000	5	Peebles	5 0 0	6 0 0	5 0 0
500	2½	Do.	2 10 0	6 0 0	2 10 0
1000	25	Perth	25 0 0	6 10 0	30 0 0
3000	5	Perth, New	5 0 0	5 10 0	
		Peterhead			
2000	1	Pettenween	1 0 0	6 0 0	1 1 0
2416	1	Pollokshaws, near Glasgow	1 0 0	7 10 0	1 5 0
		Port Glasgow			
		Portobello, near Edinburgh			
		Selkirk			
		South Queensferry			
250	12	St. Andrew's	12 0 0	6 5 0	16 0 0
193	12	Do., new	12 0 0	6 5 0	16 0 0
200	5	Stewarton	5 0 0	10 0 0	6 to 6½
7450	2	Stirling	2 0 0	8 0 0	3 12 0
2500	1	Stonehaven	1 0 0	6 5 0	1 5 0
1110	1	Stonehouse, Lanarkshire	1 0 0	7 10 0	13s. to 15s.
600	2½	Stornoway	2 10 0		2 10 0
500	5	Stranraer	5 0 0	7 10 0	6 0 0
588	2	Strathaven	2 0 0	8 0 0	3 0 0
643	2½	Thurso	2 10 0		2 10 0
		Tillicoultry, near Alloa			
		Tranent	1 0 0	5 0 0	1 0 0
		Troon			
2051	1	Wemyss & Buckhaven	1 0 0	6 0 0	1 0 0
		Wick			
665	5	Wigtown	5 0 0		
		IRELAND.			
		Ardee			
300	10	Armagh	10 0 0	10 0 0	19 to 20
1800	1	Antrim (Limited)	1 0 0		1 0 0
500	5	Athy (Limited)	4 0 0	6 0 0	5 0 0
600	5	Ballymena	5 0 0	15 0 0	5 10 0
184	10	Ballymoney	10 0 0	5 0 0	10 0 0
220	5	Ballynahinch (Ld.)	5 0 0	5 0 0	5 0 0
		Ballycastle			
	80	*Belfast*	80 0 0	10 0 0	100 0 0
	20	Do., new shares	20 0 0	10 0 0	25 0 0
1055	5	Carlow	5 0 0	5 0 0	5 0 0
600	5	Carrickfergus (Ld.)	5 0 0	8 0 0	6 5 0
197	10	Carrickmacross (L.)	10 0 0	5 0 0	10 0 0
228	10	Castleblaney (Ld.)	10 0 0	5 0 0	10 0 0
400		Cavan (Limited)	5 0 0		
500	5	Cookstown	5 0 0	5 0 0	
1300	5	Clonmel Consumers	5 0 0	5 0 0	5 0 0
240	5	Comber (Limited)	5 0 0	5 0 0	5 0 0
		Coote Hill			
8000	5	Cork Consumers' (Limited)	5 0 0	6 10 0	7 0 0
4000	5	Do., new shares	1 5 0	6 10 0	2 0 0
608	11	Drogheda	11 0 0	7 0 0	14 10 0
420	5½	Do., new shares	5 10 0	7 0 0	7 5 0
		Dublin Hibernian (*see* Untd. Gen.)			
19000	10	*Dublin Alliance*	7 0 0	7 10 0	8¼ to 8½
220	25	Dundalk (Limited)	25 0 0	5 0 0	25 0 0
200	10	Dungannon	10 0 0	7 10 0	12 10 0
871	5	*Downpatrick*	5 0 0	4 0 0	4 0 0
249	10	Ennis (Limited)	10 0 0		11 0 0
210	25	Galway	25 0 0	10 0 0	35 0 0
		Keady			
400	10	Kilkenny (Limited)	10 0 0	7 0 0	11 0 0
		Kilrush			
210	10	Larne (Limited)	10 0 0	5 0 0	10 0 0
150	10	Letterkenny (Ld.)	10 0 0		12 10 0
1725	5	Limerick	5 0 0		
500	10	Lisburn (Limited)	8 0 0	10 0 0	10 0 0
300	5	Lismore	5 0 0	3 0 0	
100	5	Do., preference	3 0 0	5 0 0	
600	15	Londonderry	15 0 0	6 13 4	21 0 0
		Longford			
520	10	Lurgan	7 0 0	6 0 0	7 0 0
		Mallow			
2191	1	Maryborough (Ld.)	0 5 0		0 5 0
		Monaghan			
		Navan			
		Nenagh			
450	5	Newtownards	5 0 0	7 0 0	6 5 0
200	10	Newtownlimavady	10 0 0	5 0 0	10 0 0
1000	5	Newry Consumers' (Limited)	5 0 0		7¼ to 7½
500	5	Omagh	5 0 0	7 10 0	6 0 0
125	20	Portadown	20 0 0	5 0 0	21 0 0
		Portaferry			
500	10	Queenstown	10 0 0	5 0 0	
900	10	Sligo	10 0 0	6 0 0	10 0 0
1600	10	Waterford	10 0 0	6 0 0	12 0 0
300	10	Wicklow (Lim.)	10 0 0	5 0 0	10 0 0

The Gas-Works in the undermentioned towns belong to private individuals. Those marked * by the purchase of the shares in extinct companies :—

Abergavenny.	Brough.	Ellesmere.	Halstead.	Littleborough.	Penryn.	Thirsk.
Alford.	Burntisland.	Enniscorthy.	Harleston.	Lynn.	Peterborough.	Tipperary.
Beaufort (Brecon).	Bungay.	Ely.	Harrow on-the-Hill.	Market Deeping.	Pontypool.	Tiverton*.
Billericay.	Chard.	Falmouth.	Hayle.	Nettlebed.	Rhyl.	Waltham Abbey.
Blaydon, near Newcastle.	Chapel-en-le-Frith.	Farsley.	Holbeach.	Newport* (I.W.).	St. Ives* (Hunts).	Ware.
Bodmin.	Clare.	Fermoy.	Holt.	Newport (I.W.), New.	Sidmouth.	Wem.
Boroughbridge.	Crewe.	Ferry Hill.	Hunmanby.	New Ross.	Sittingbourne.	Wexford.
Bridgenorth.	Crewkerne.	Fleetwood.	Kings Langley.	Oakham*.	Spalding.	Whitchurch (Salop).
Broadbottom.	Crickhowell.	Goole.	Knutsford.	Oswestry.	Stokesley.	Whitby.
	Dingwall.	Hadleigh.	Leiston (Suffolk).	Parsonstown.	Stowmarket.	

The Gas-Works belong to Municipal Corporations, or to Commissioners acting under special Acts of Parliament, in the following towns :—

Athlone.	Cashel.	Great Malvern.	Leek.	Newton (Lanc.).	Rothesay.	Tralee.
Ballinasloe.	Coleraine.	Greenock.	Limerick Corporation Works.	Oldham.	Salford.	Trim (Meath).
Beverley.	Dalton.	Halifax.		Paisley.	Southport.	Wallasey.
Birkenhead.	Darlington.	Haverfordwest.	Lytham (Lanc.).	Renfrew.	Stockton-on-Tees.	Walsall.
Blackpool.	Devizes.	Keighley.	Manchester.	Richmond (York).	Stockport.	Wells (Norfolk).
Burnley.	Doncaster.	Kells (Meath).	Middlesborough.	Rochdale.	Strabane.	Workington.
Bury (Lanc.).	Enniskillen.	Knaresborough.	Milton (Kent).	Ross.	Teignmouth.	Youghall.
Carlisle.						

Price Current.

CASTINGS, per Ton.

Average Weight of Cast-Iron Gas-Pipes, per Yard.

1¼ in.	2 in.	2½ in.	3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.
16	21	28	33	51	70	89	107	126	149	177	208 lbs.

Retail Prices are 5 to 10 per cent. higher.	London.	Glasgow.	Newcastle.	Wales.	Yorkshire, Derbyshire, and Staffordsh.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Pig Iron, No. 1	4 0 0	2 17 6	3 0 0	3 5 0	3 10 0
1¼ and 2 inches Socket-Pipes	7 0 0	6 0 0	6 5 0	6 10 0	6 15 0
2½ and 3 ,, ,,	6 10 0	5 10 0	5 15 0	6 0 0	6 5 0
4 and 5 ,, ,,	6 0 0	5 0 0	5 5 0	5 10 0	5 15 0
6 in. and upwards ,,	5 15 0	4 15 0	5 0 0	5 5 0	5 10 0
Retorts, 1st fusion, hot blast	5 10 0	4 10 0	4 15 0	5 0 0	5 5 0
,, 2nd ,, cold ,,	6 10 0	5 5 0	5 10 0	6 0 0	6 5 0
Tank Plates, ⅜ thick and above	6 0 0	5 0 0	5 5 0	5 10 0	5 10 0

WROUGHT-IRON TUBING,

Subject to 40 per cent. Discount.

	2 in.	1½ in.	1¼ in.	1 in.	¾ in.	½ in.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Patent Welded Tubes, from 2 to 12 ft., perft.	1 8	1 0	0 10	0 7	0 5	0 4½
,, ,, ,, 6 in. to 18 in., each	3 0	2 0	1 9	1 3	1 0	0 9
Connecting-Pieces, or Long Screws	3 6	2 3	2 0	1 6	1 2	0 11
Bends, Springs, and Elbows—wrought iron	3 9	2 3	1 9	1 0	0 10	0 8
Tees, wrought or cast	4 0	2 6	2 0	1 6	1 1	0 10
Crosses, wrought or cast	4 6	3 0	2 6	2 0	1 6	1 2
Iron Cocks	17 6	9 6	7 6	4 6	3 3	2 6
,, with brass plug	28 0	16 0	13 0	7 0	5 6	4 6
Diminishing Sockets, Caps, Plugs, and Plain Sockets [Nipples	1 3	0 9	0 8	0 6	0 5	0 4
Syphons, 2 quart	15 0	14 0	13 6	13 0	12 0	0 3 —

COALS, per Ton.

Newcastle.—Unscreened.		*Scotch Cannel.*	
Whitwell Primrose	6s. 3d.	Boghead, at Leith	45s. 0d
Medomsley, Eighton Moor, and Burnhope	6 6	Kirkness, best	23 0
Pelaw	6 9	Capeldrae, 1st quality	20 0
New Pelton, Peareth, South Pelaw, Washington Hutton, and South Peareth	7 0	,, 2nd ,,	12 6
Pelton	7 9	Lesmahago, at Glasgow	25 0
Ramsay's Newcastle Cannel	16 0	,, ,, Leith	27 6
		Arniston	22 0
		Wemyss	20 0
		Knightswood	18 0
		Pirnie	15 0

FREIGHTS.

Coastwise—Newcastle.—Per Ton.		*Foreign.—Per Keel.*	
Chatham & Rochester	6s. 6d.	Boulogne and Calais	£7 15 0
Cork	10 6	Barcelona	23 0 0
Dover	8 0	Bordeaux	14 5 0
Dublin	12 0	Cadiz	13 0 0
Exeter Quay	9 6	Copenhagen	8 10 0
Folkestone	8 0	Dieppe	8 15 0
London (Pool)	6 4½	Genoa	23 0 0
Lowestoft & Yarmouth	5 0	Hamburg	8 5 0
Lynn	—	Havre	9 0 0
Portsmouth	7 9	Leghorn	23 0 0
Plymouth	9 6	Lisbon	16 0 0
Ramsgate & Margate	8 0	Rotterdam	8 0 0
Whitstable	7 0	Stettin	11 0 0
Weymouth	—	Trieste & Venice	£25 to 26 0 0

SUNDRIES.

Best Newcastle Fire-bricks	per 1000	50s. 0d.	
Cliff's Fire-bricks, at Wortley	per 1000	57 6	
Ingham's Fire-bricks, at Wortley	,,	55 0	
Fire-clay Retorts	per foot run,	5s. 6d. to 7 0	
Tough Cake Copper ... per ton	£107 10s.	Foreign Spelter ... per ton	£20 15 0
English Pig Lead ... ,,	22 15	English Block Tin ... ,,	136 0 0
Welch Bar Iron, in London ,,	6 15 0	Banca ... ,,	137 0 0
Tarred Rope Yarn	per cwt.	26s. 0d.	

Share List of Water Companies.

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
			£ s d	£ s d	£ s d
1050	10	Accrington Gas and Water	10 0 0		15 0 0
1050	10	Do., new shares	10 0 0		15 0 0
2100	5	Do., do.	5 0 0		7 10 0
2100	5	Do., do.	5 0 0		7 10 0
2100	2½	Do., do.	0 10 0		0 15 0
		Airdrie and Coatbridge			
588	1	Alexandria	1 0 0		0 2 6
800	25	Ayr	25 0 0	5 0 0	25 0 0
		Banbury			
2150	10	Bangor	10 0 0	5 0 0	10 0 0
4800	25	Birmingham	25 0 0	6 0 0	39 0 0
4800	25	Do., new shares	22 10 0	6 0 0	33 15 0
710	10	Beccles Gas and Water	10 0 0	2 10 0	
		Blackburn			
600	75	Bolton	75 0 0	5 11 6	123 to 126
600	25	Do.	25 0 0	1 17 2	41 to 42
		Boston			
		Brighton, Hove and Preston			
8000	25	Bristol	25 0 0	1 8 0	12 0 0
5000	10	Bury and Radcliffe	10 0 0	2 0 0	10 0 0
1333	15	Do., pref. shares	15 0 0	10 0 0	31 15 0
1333	18	Do., do.	6 0 0	10 0 0	14 0 0
2000	10	Do., do.	5 0 0	4 0 0	5 0 0
2000	10	Do., do.	1 0 0	4 0 0	5 0 0
		Cambridge			
240	50	Canterbury Gas and Water	50 0 0	6 0 0	52 to 60
240	25	Do., new shares	25 0 0	6 0 0	25 to 30
240	12½	Do., do.	12 10 0	6 0 0	12½ to 15
240	6½	Do., do.	6 5 0	6 0 0	6½ to 7½
1500	20	Cardiff	20 0 0	7 0 0	28 17 6
1500	10	Do.	10 0 0	7 0 0	14 7 6
		Cheltenham			
		Chepstow			
		Chester			
19200	Sk.	Chesterfield Gas and Water		5 0 0	
400	50	Do., shares	50 0 0	5 0 0	52 0 0
		Colchester			
175	20	Colne	20 0 0	5 0 0	28 0 0
1250	20	Darwen	20 0 0	2 10 0	19 to 19½
1400	5	Deal	5 0 0	5 0 0	5 0 0
1481	25	Derby	25 0 0	7 10 0	50 0 0
400	50	Dudley	50 0 0	1 0 0	20 0 0
250	25	Do., pref. shares	25 0 0	4 10 0	
		Dukinfield			
11600	10	Dundee	10 0 0	5 0 0	11 0 0
2670	5	Dunfermline	5 0 0	2 0 0	2 10 0
7360	25	Edinburgh	25 0 0	5 0 0	28 0 0
7360	12½	Do., new shares	12 10 0	5 10 0	16 0 0
7218	6½	Do., do. quarter shares	6 5 0	5 0 0	7 0 0
5581	6½	Do., do. do.	2 10 0	5 0 0	2 15 0
2000	25	Exeter	25 0 0	6 10 0	42 0 0
		Falmouth			
		Folkestone			
	20	Gravesend and Milton	20 0 0	3 0 0	14 to 16
1000	5	Greenock (Shaw's Gravitation)	50 0 0	7 0 0	68 to 70
6800	5	Hartlepool Gas and Water	5 0 0	7 0 0	
3322		Do., new shares	5 0 0	7 0 0	
9878	5	Do., do.	1 10 0	7 0 0	
		Harrowgate			
		Heywood			
1200	10	Inverness Gas and Water	10 0 0	7 0 0	14 0 0
2400	5	Do., new shares	1 5 0	7 0 0	2 0 0
1842	10	Kendal Union Gas and Water	9 0 0	6 5 0	12½ to 13½
380	20	Do., preference	20 0 0	7 10 0	35 0 0
1500	10	Kilmarnock	10 0 0	2 0 0	8 0 0
3200	25	Leicester	25 0 0	4 10 0	27 10 0
120	25	Lewes	25 0 0	6 0 0	26 0 0
		Limerick			
720	25	Lincoln	25 0 0	5 5 0	30 10 0
200	25	Do., new shares	25 0 0	4 5 0	26 0 0
		Llandudno Gas and Water			
		London Comps.—			
47000	10	Berlin	10 0 0		4½ to 4¾
	25	Chelsea	25 0 0	3 0 0	15 to 16
	25	Do., new shares	25 0 0	4 10 0	24½ to 25½
975000	Sk.	East London	Stock.	6 0 0	125 to 128
8000	50	Grand Junction	50 0 0	7 10 0	73 to 75
5840	25	Do., half shares	25 0 0	7 10 0	37 10 0
2310	100	Kent	100 0 0	5 0 0	98 to 102
1460	100	Lambeth	100 0 0	5 0 0	98 to 100
4120	50	Do., new shares	50 0 0	5 0 0	50 0 0
		New River			
1360	100	New River London Bridge Annuities	100 0 0	2 10 0	55 0 0
3036	100	Southwark and Vauxhall	100 0 0	5 10 0	109 to 112
3036	25	Do., do.	25 0 0	5 0 0	27 10 0
1265	100	Do., do.	10 0 0	5 0 0	
11064	61	West Middlesex	61 0 0	5 0 0 per sh.	107 to 109
2500	10	Lowestoft Gas and Water			
		Margate			
650	5	Mold Gas and Water	5 0 0	7 10 0	6½ to 6¾
700	10	Monmouth Gas and Water	10 0 0	5 0 0	10 0 0
25000	Sk.	Newcastle-on-Tyne (Whittle Dean)	Stock.	5 0 0	102 0 0
9600	6½	Do., do.	5 0 0	5 0 0	1 7 6
135	20	Newport, Carisbrooke	20 0 0	4 10 0	26 0 0
		Newport, Mon.			
		Norwich			
3600	50	Nottingham	50 0 0	5 0 0	60 10 0
		Oxford			
5980	10	Paisley	10 0 0	6 13 4	14 2 6
		Portsmouth			
1500	10	Ramsgate	10 0 0	6 0 0	13 to 13½
		Reading			
		Reading Union			
		Richmond, Surrey			
		Rochdale			
		St. Helen's			
		Scarborough			
		Sheffield			
		Shrewsbury			
11184	10	South Staffordsh.	10 0 0		9 12 6
2554	10	Do.	5 0 0		
21000	5	Staffordshire Potteries	5 0 0	6 0 0	7 5 0
1800	12½	Stockton and Middlesborough	12 10 0	6 0 0	
800	12½	Do., A shares	12 10 0	6 0 0	
1591	12½	Do., B shares	7 0 0	6 0 0	
4000	10	Do., C preference	2 0 0	5 0 0	2¾ to 3
21800	5	Sunderland and South Shields	5 0 0	8 0 0	8 2 6
		Tolcross, Lanark			
		Wakefield			
		Warrington			
		Weymouth			
		Winchester			
		Wolverhampton			
20000	5	Wolverhampton New Co.	5 0 0	4 0 0	5 0 0
6000	10	York New Co.	10 0 0	5 0 0	11 12 6

The Water-Works in the undermentioned towns belong to private individuals :—

Campbelltown. Chidwall (Lancaster). Hastings (Eversfield Estate). Hyde (Cheshire). Ollerset (Derby). St. Leonard's. Stamford. Tunbridge Wells.

The Water-Works belong to Local Boards of Health, or to Municipal Corporations, or to Commissioners acting under Special Acts of Parliament, in the following towns :—

Aberdeen.	Carmarthen.	East Stonehouse.	Keighley.	Macclesfield.	Pontefract.	Stockport.
Aberystwith.	Chorley,	Glasgow.	Kirkcaldy.	Maidstone.	Poole.	Swansea.
Ashton-under-Lyne.	Cork.	Gloucester.	Leamington.	Manchester.	Port Glasgow.	Teignmouth.
Barnsley.	Coventry.	Halifax.	Leeds.	Montrose.	Preston.	Warwick.
Bath.	Croydon.	Hastings.	Leek.	Oldham.	Rugby.	Whitby.
Belfast.	Darlington.	Haverfordwest,	Leith.	Pembroke.	Salisbury.	Whitehaven.
Birkenhead.	Dover.	Huddersfield.	Liverpool.	Perth.	Southampton.	Wirksworth.
Bradford.	Dublin.	Hull.	Lytham.	Peterhead.	Stirling.	Worcester.
Burnley.	Dumfries.	King's Lynn.				

GAS MANAGER WANTED.

WANTED, by the Conway Gas COMPANY (LIMITED), a PERSON qualified to undertake the manufacture of Gas, the laying of Main and Service-Pipes, surveying the Meters, Collecting and paying the Accounts, and keeping the Books of the Company. Also, doing all the other Duties connected with the Work.

Applicants are requested to send their Testimonials, stating Salary expected, to the SECRETARY, on or before the 14th day of April next.

House, Coals, and Gas free.

GAS Apparatus of every kind, and their action explained and thoroughly tested as to the practicability of HEATING BATHS, Conservatories, Halls, Public Buildings, &c., for all kinds of Cooking and Domestic Purposes, at PHILLIPS'S MANUFACTORY, 55, Skinner Street, SNOW HILL, E.C. (the Original Inventor and Patentee), Gas-Fitter by appointment to Her Majesty's Government and many of the Nobility.

N.B.—An assortment of Hughes's Patent Safety Atlas Chandeliers, and all kinds of Gas-fittings of a superior style and workmanship.

TO GAS ENGINEERS AND GAS COMPANIES.

TO be sold cheap, 16 Guide Columns for GASHOLDERS from 30 feet to 40 feet diameter, 12 feet to 18 feet deep; an Hydraulic Centre Valve, with 6 inch connexions; a Bye-Pass Valve with 8 inch connexions; and sundry second-hand Valves, from 4 to 6 inches diameter.

Particulars will be forwarded upon application to Mr. MORTON, Equitable Gas-Works, WOOLWICH.

TO GAS ENGINEERS.

THE United General Gas Company require the Services of an ENGINEER thoroughly experienced in the Manufacture of Gas from Clay Retorts, and accustomed to the Superintendence of Works capable of distributing upwards of 300,000,000 cubic feet annually.

He must possess all the qualifications of an experienced Engineer, such as Drawing, Construction of Buildings, Machinery, Gas Apparatus, &c.

The highest Testimonials will be required.

Applications, containing all necessary information as to qualifications, past and present engagements, with Specimens of Drawing, to be sent to the care of the SECRETARY, United General Gas Company, 6, Austin Friars, LONDON, on or before April 14 next.

TO GAS COMPANIES, CONTRACTORS, AND OTHERS.

THE Vestry and the Parish of Bermondsey, Surrey, are desirous of treating with any Person or Persons willing to SUPPLY the PUBLIC LAMPS in their District with Gas, or other equally powerful illuminating material, for a period of Three, Five, Seven, Ten, or Fourteen Years, from Midsummer, 1861.

The number of Public Lamps at present lighted is 614; but, as a large portion of the Parish is being laid out for Building Purposes, that number will be increased materially. If Gas be supplied, it is to be pure Carburetted Hydrogen, free from Sulphur and Ammonia.

The Contractor will have to provide and maintain all Lamp-posts, Brackets, Lanthorns, and other necessary Fittings which may be required during the Term.

Further information may be obtained upon application at the Vestry Office, in Maltby Street, BERMONDSEY, prior to the 7th of May next, when the Vestry will meet to consider Tenders or Applications.

April 3, 1860. GEORGE H. DREW, Clerk.

WOLVERHAMPTON RETORT WORKS.

ESTABLISHED **1840.**

JOHN EUNSON AND SON,

GAS ENGINEERS, AND MANUFACTURERS OF CLAY RETORTS,

AND FIRE GOODS IN GENERAL,

WOLVERHAMPTON.

Retort Mouthpieces, Bolts, Nuts, and every description of Wrought-Iron Work.

PADDON AND FORD,

GAS-METER AND APPARATUS WORKS,

GRAY'S INN ROAD, LONDON.

MANUFACTURERS OF WET AND DRY GAS-METERS, STATION-METERS, GOVERNORS, EXPERIMENTAL APPARATUS, &c. &c.

Sole Manufacturers of Sanders's Patent Compensator for maintaining a correct Water-Level in the Meter without impeding its legitimate action.

All Meters manufactured by P. and F. are guaranteed to be in strict conformity with Lord Redesdale's Sale of Gas Act.

A large number of **STATION-METERS,** up to 80,000 feet per hour (being by far the largest in use), and **GOVERNORS** for **MAINS,** up to 24 inches, have been constructed by Paddon and Ford. These Meters and Governors possess peculiar advantages as regards strength and freedom of action. The Meters are warranted to offer less resistance than Meters generally.

Manufacturers also of **PADDON'S PATENT STREET-LAMP REGULATORS,** for insuring any required consumption. These Regulators are in general and increasing use, and references can be given to Gas Companies who use them for every Lamp.

Contractors for the erection or alteration of Gas-Works, and every description of apparatus required in Gas-Works supplied.

SALE OF GAS ACT.—

At a Meeting of MANUFACTURERS of GAS-METERS, held at Radley's Hotel, New Bridge Street, Blackfriars, on Tuesday, March 27, 1860,—Mr. ROBERT BEVERLEY, of Leeds, in the chair,—the Honorary Secretary (Mr. W. Crosley) read portion of an article inserted in the JOURNAL OF GAS LIGHTING of that day, relative to the candidature of Mr. Geo. Glover for an appointment under the Sale of Gas Act.

It was thereupon moved by Mr. Defries, seconded by Mr. Ford, and carried unanimously: "That the memorial to the Lords of the Treasury, with reference to Mr. George Glover, be handed to their lordships, by a deputation from the committee of the meeting at the earliest possible day; and that copies of the same be sent through the post to the Comptroller-General of the Exchequer, the President of the Board of Trade, the Secretary of State for the Home Department, and to the Astronomer Royal."

It was moved by Mr. Defries, jun., seconded by Mr. Hulett: "That no member of the committee or of the association, except the chairman and honorary secretary, in their official capacity, shall call upon the parliamentary agent on the business of this association, without the previous consent of the meeting; or that, if he or they infringe such regulation, he or they shall thenceforth cease to be a member or members of the committee or association."

The Honorary Secretary read communications received from various parts of the country, and the correspondence which had taken place with the Government since the last meeting; also the Minute of the Lords of the Treasury in reference to the representations of the deputation from this meeting.

It was thereupon moved by Mr. Rait, and seconded by Mr. Hulett: "That the scale be on the bell of the gasholder, as described in the Treasury Minute of March 24th."

An amendment was moved by Mr. Crosley, to the effect, "That if it be on the bell, it be also on the wheel above, as being more distinct, a longer and clearer scale, and more conducive to correct testing, especially in large gasholders." The amendment was lost, a fear being entertained by the meeting, that if the matter were pressed, it would lead to further delay with the Government.

It was moved by Mr. Defries, and seconded by Mr. Hartley: "That it is the opinion of this meeting, that it would prevent a great amount of misconception erroneous orders, and unnecessary expense, if it would suit the convenience of the Astronomer Royal, the Comptroller General of the Exchequer, the Lords of the Treasury, the President of the Board of Trade, and the Secretary of State for the Home Department, in all documents and correspondence, to call the instrument to be used for testing meters a 'gasholder,' as in the Act, and as is usual with all persons connected with gas affairs, instead of 'gas-measurer,' as the Astronomer Royal now calls it; and that a copy of this minute be sent to each of the above departments of the Government."

It was moved by Mr. Defries, and seconded by Mr. Rait: "That the best thanks of this meeting be presented to Mr. Crosley, the honorary secretary for his zeal and exertions in connexion with the present movement, and for the kind and gentlemanly way in which he has conducted all the negotiations arising out of it."

It was proposed by Mr. Ford, and seconded by Mr. Mead: "That the thanks of the meeting be given to the chairman for his valuable services in the chair."

ROBERT BEVERLEY, Chairman.

TO GAS & WATER COMPANIES, ENGINEERS AND FITTERS.

GARSIDE'S Registered Tube-Vice holds all sizes of Wrought-Iron and Brass Tubes with the greatest firmness and least possible pressure; consequently it is not so liable to split or damage the Tubes as the ordinary Vice, and considerably facilitates the Workman, who may do almost double the quantity of work. Also,

GARSIDE'S IMPROVED MAIN-DRILLING CLIPS, for Drilling Holes for Service-Pipes. With this instrument the perforation of Pipes for the attachment of smaller Tubes can be effected with great ease and precision. Likewise,

HEAP'S REGISTERED GAS TONGS, most highly approved of as vastly superior to those in present use. Stocks, Taps, and Dies, together with all tools connected with Gas Engineering.

For Drawings, Testimonials, and prices, apply to the Maker, S. GARSIDE, Stamford St., ASHTON-UNDER-LYNE.

CAUTION.

TO GAS-METER MANUFACTURERS AND OTHERS.

THE Undersigned hereby caution Meter Manufacturers and others against infringing the exclusive right of the Undersigned to the use of the Screw Adjustment for regulating the Height of the Overflow-Pipes in Wet Gas-Meters, as described in the Specification of the Letters Patent granted to Crosley and Goldsmith on the 19th of April, 1856; as well as against infringing any other portions of that or any other Patent of the said William Crosley; and

NOTICE is further given, that all Infringers of the said Inventions, or any portions of them, will be proceeded against. CROSLEY & CO.,

103, SOUTHWARK BRIDGE ROAD,
LONDON, Aug. 29, 1859.

BENJAMIN GIBBONS, Jun.,
DEEPDALE FIRE-CLAY & BRICK WORKS,
Near DUDLEY,

Manufacturer of every description of Fire-Bricks, Lumps, Quarries, Shields, Flue Covers, &c., to any size or shape required.

FIRE-CLAY RETORTS,
TO MODEL OR DRAWING.

B. G. begs to call the attention of Gas Companies to his Fire-Clay Retorts, which have been used with great satisfaction in some of the largest Gas-Works in the Metropolis and many Provincial Towns in England.

References given, if required.

WHITEHOUSE and CO., Boiler and GASHOLDER MAKERS,
GLOBE PATENT TUBE WORKS,
WEDNESBURY,

Beg to draw the attention of Engineers and Managers of Gas Works to the superior quality of the Article they manufacture, both in respect of the iron employed, and the perfect manner in which it is welded; in proof of which they can refer to the testimonials of the most eminent Gas Engineers, and the experience of the principal of the large Gas Companies of the kingdom.

Orders promptly executed.

TO Mr. BENJAMIN WHITEHOUSE,
GASHOLDER MAKER,
WESTBROMWICH, NEAR BIRMINGHAM.

Sir,—I feel great pleasure in expressing my satisfaction at the manner in which you discharged your duties as CONTRACTOR for the TELESCOPIC GASHOLDER, 150 feet diameter and 60 feet deep, erected at this Company's Nine Elm Station in 1857. From that period to the present I have closely watched its working, and have never found the least defect either in workmanship or material.

During the recent heavy gales the Gasholder, although containing upwards of 1,000,000 cubic feet of Gas, showed no perceptible indications of its influence, but worked as freely and easily as usual.

RICHARD JONES.
Engineer to the London Gaslight Company.
Vauxhall, London, Nov. 9, 1859.

CANNEL and COAL of the best descriptions for making GAS and COKE.
(As per Analyses.)

GAS CANNEL, 17s., 15s. 6d., and 14s. per ton.
GAS COAL, 11s. 6d., 9s. 6d., and 8s. 6d. per ton.
STEAM COAL, 10s., 9s. 6d., and 9s. per ton.
All free on board Vessels in Liverpool.

Handpicked Cannel and Coal about 10 per cent. additional. Concession in prices made for large quantities.

GAS APPARATUS of all descriptions, and on the most approved principles; also Purifying and other materials supplied.

ANALYSES, PLANS, and ESTIMATES, and other information required, and the highest references furnished on application.

CONTRACTS for Materials and Works entered into.

No charge made for Superintending Shipments, Preparing Bills of Lading, or passing Entries.

EMANUEL TURNER and CO.,
EXPORT OFFICES:
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GEORGE ANDERSON, Gas and
CONSULTING ENGINEER,
104, LEADENHALL STREET, LONDON (E.C.).

DIRECT-ACTING GAS-EXHAUSTERS,
supplied either with or without Steam-Engines and Boilers.

FOUR-WAY DIAPHRAGM VALVES,
one of which answers the purpose of THREE ordinary Valves, as applied to Purifiers, or in shutting off and passing Station-Meters, Governors, or other apparatus, while the Connecting-Pipes are also much simplified.

RETORT SETTINGS,
designed to be heated by Tar alone, and with a total absence of Smoke.

Illustrated circulars, giving references and every information, may be obtained on application as above.

ALFRED PENNY, Engineer,
WENLOCK IRON WORKS,
WHARF ROAD, CITY ROAD, LONDON.

Mr. PENNY begs to inform Gas and Water Companies that he undertakes the erection of new, or the alteration of existing, works; and that he may be consulted generally on all matters connected with gas and water supply. He is also prepared to supply best Cold-blast Retorts, Socket-Pipes, and Connections, Iron Borings, &c. &c., and all the necessary Castings used in Gas and Water-Works.

*** Country orders executed with care and despatch.

SAMUEL CUTLER, Gasholder
MAKER and CONTRACTOR

For Tanks, Roofs, Purifiers, Condensers, Erection and Alteration of Works and every description of GAS APPARATUS.

PROVIDENCE IRON WORKS,
MILL WALL, POPLAR, LONDON, E.
Main Laying and Gas-Works erected complete.

EIGHTON MOOR GAS COALS.—Parties wishing to be supplied with these first-class Gas Coals will please to apply to Mr. MATTHEW NESBIT, EIGHTON MOOR OFFICE, NEWCASTLE-UPON-TYNE. These coals are well known as among the richest in gas, and working the roundest on the River Tyne. They are extensively used by metropolitan gas works.

JAMES NEWTON,
(Established 1820,)
FIRE-BRICK AND TILE MERCHANT,
Wholesale and for Exportation,
FALCON DOCK, 78 AND 79, BANKSIDE,
SOUTHWARK, LONDON.

DEPÔT for STOURBRIDGE AND NEWCASTLE FIRE-BRICKS, LUMPS, TILES, and CLAY, and every Article suitable for

GAS AND WATER WORKS.

JOHN ROGERSON and CO.,
NEWCASTLE-ON-TYNE & MIDDLESBRO'-ON-TEES.

Wrought and Cast Iron Pipes, Cast-Iron Retorts, and all kinds of Foundry Work necessary for Gas-Works. Fire-Bricks and Clay Retorts. Gas Coals of every description. Pig, Bar, and Plate Iron.

LONDON HOUSE:
12, ROYAL EXCHANGE BUILDINGS.

ROBERT MACLAREN and CO.,
EGLINTON FOUNDRY, GLASGOW,
Manufacturers of all sizes of Cast-Iron Main Pipes, by an improved Patent. General Ironfounders, Gas Engineers, and Wrought-Iron Tube Makers.

M. SHEEN, Gas and Railway Lantern Maker, 90½, Holborn Hill, begs to inform Managers of Gas-Works, &c., that she continues to contract and supply Lanterns on reasonable terms, and keep them in repair by the year.

JOSEPH WILLCOCK
(late BARLOW and CO.),
Mechanical and Architectural Draftsman, Designer, Serveyor, an Lithographer to Gas Engineers and Gas Apparatus Manufacturers, formerly Superintending Engineer at the largest Gas Apparatus Manufactory on the Continent.

Patent and Designs Office, 89, Chancery Lane, LONDON, W.C.

CHARLES BOTTEN and SON,
ENGINEERS & METER-MAKERS,
CRAWFORD PASSAGE, RAY STREET,
CLERKENWELL, LONDON (E. C.).

Manufacturers of Station and Patent Protector Consumers' Meters, Patent Slide-Valves, Gas-Fittings, Pipes, &c.

Also, High-pressure Cocks, Hydrants, Closets, and all Water-Fittings.

WILLIAM STEPHENSON & SONS,
THROCKLEY,
NEWCASTLE-ON-TYNE,
MANUFACTURERS OF EVERY DESCRIPTION OF
FIRE BRICKS, CLAY RETORTS, LUMPS, TILES,
&c. &c.

LONDON OFFICES:
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A large stock of Fire-Clay Goods always on hand in London, at the lowest wharf prices, at Messrs. CHRISTIE & Co.'s Wharf, 64, Bankside, SOUTHWARK.

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THE MACHEN COLLIERY
COMPANY, NEWPORT (MON.).

Shippers of Fire-Goods of First-class quality manufactured from a remarkably pure seam of Fire-Clay.

Railway Communication by Broad or Narrow Gauge with all parts of the Kingdom, and by Seaboard, Coastwise, and Foreign.

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Mr. JOHN ROBATHAM,
CLINK STREET, BANKSIDE, SOUTHWARK,
where a stock of the above is always kept.

WEST and GREGSON, Gas-Meter
MANUFACTURERS, &c.
UNION STREET, OLDHAM.

Station and Experimental Meters, Gas Pressure Registers, Gauges, Experimental Gasholders, Governors, Slide Valves, &c. &c.

W. and G. would respectfully call the attention of Gas Engineers and Managers to their Station-meters, having made and erected the largest in use at the present time, two of which may be seen at the Stockport and Liverpool Gas Works, on application to the respective Engineers.

ADDISON POTTER,
WILLINGTON QUAY,
NEAR NEWCASTLE-UPON-TYNE,
Manufacturer of Clay Retorts, Fire Bricks, and every description of Fire Clay Goods.

FLEXIBLE GAS TUBING,
VULCANIZED INDIARUBBER HOSE-PIPES,
WASHERS FOR STEAM-JOINTS, &c.

JAMES LYNE HANCOCK begs to inform the trade he has considerably improved the manufacture of his FLEXIBLE TUBING, both PLAIN and GLAZED. Made all sizes in 60 feet lengths.

INDIARUBBER GAS BAGS, fitted complete with Stop-Cocks and Tubes.

All orders to be addressed to JAMES LYNE HANCOCK, Vulcanized Indiarubber Works, Goswell Road, (opposite Spencer Street) LONDON (E.C.).

CAST-IRON Retorts, Socket Pipes, with Syphons and all requisite Connexions, Lamp Columns, Wrought Iron Tubing, Valves, Street Lamps, Sight Holes, Furnace Doors, Ash Pans, Charging and Coke Shovels, Iron Pails and Coke Barrows, Cross Bars, Fire Pots, Pumps, Iron Borings.

PURIFIERS, CONDENSERS, and SCRUBBERS erected complete, or the materials supplied; with every description of goods in use by Gas-Works, in stock, on wholesale prices, at

Mr. LYNCH WHITE'S,
Old Barge Iron Wharf, Upper Ground Street,
LONDON.

BOULTON'S PATENT DRY GAS-METERS,

Of which upwards of 24,000 are at present in use, having gained for themselves an unparalleled patronage from all the principal Gas Companies and Consumers, on account of their unerring registration and the superior workmanship and materials used in their construction, enables the Patentee to sell them now at competitive prices with those of other makers.

Every description of Improved Wet or Patent Dry Meters and Gas Apparatus manufactured by

JOSEPH BOULTON,

28, BAGNIGGE WELLS ROAD, CLERKENWELL.

All Meters warranted to comply with the requirements of Lord Redesdale's "Sale of Gas Act."

BENT AND SON,

283, BELL-BARN ROAD, BIRMINGHAM,

(ESTABLISHED 1830,)

Manufacturers of

J. C. BENT'S PATENT COMPENSATING GAS-METER;

Also of

ALLAN'S PATENT COMPENSATOR,

Both of which are warranted to meet the requirements of the SALE OF GAS ACT.

Station-Meters. Street Lamps of all kinds, plain and ornamental.

GUARANTEED WITHIN THE SALE OF GAS ACT.

ESSON'S PATENT COMPENSATING GAS-METER. | **KAY'S PATENT HYDRAULIC-VALVE GAS-METER.**

MANUFACTURED ONLY BY

WILLIAM COWAN,

Buccleuch Street Works, EDINBURGH; and Strutt Street, MANCHESTER.

ESTABLISHED 1827.

TRUSS'S PATENT ELASTIC PIPE-JOINT,

FOR GAS AND WATER-MAINS, AND STEAM PIPING,

Is the only PERFECT joint that has ever been constructed, and supplies the long-felt desideratum, by allowing for the expansion and contraction of metals, and for oscillation and deflection, without impairing the joint. Gas Companies will effect an incalculable saving in adopting it, as compared with the present imperfect mode of jointing.

Drawings, Estimates, and every particular, furnished on application to

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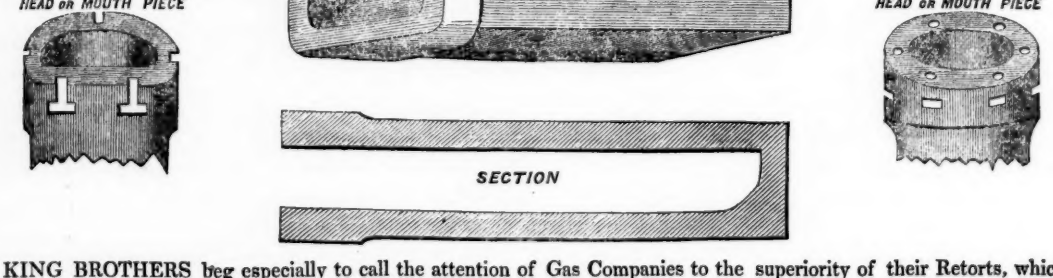
KING BROTHERS,

STOURBRIDGE FIRE-BRICK AND RETORT WORKS,



KING BROTHERS beg especially to call the attention of Gas Companies to the superiority of their Retorts, which are made from the celebrated STOURBRIDGE FIRE-CLAY. Mr. King has patented a Kiln for Burning Retorts, by which Patent all Cold Air is excluded from the Kiln while burning, thus rendering them

FREE FROM CRACKS AND CORRECT IN FORM.

By great care in Manufacturing, combined with the advantages in burning, a VERY SMOOTH SURFACE is obtained, rendering them less liable to carbonize.

RETORT OVENS, FIRE-BRICKS, GUARDS, SADDLES, RABBITTED BURS, FLUES, AND QUARRIES, ARE ALL MANUFACTURED OF THE SAME QUALITY OF CLAY.

Every Retort and Brick is branded "King Brothers, Stourbridge."

CROSLEY & GOLDSMITH'S

PATENT SELF-ADJUSTING & COMPENSATING GAS-METERS

CANNOT BE OVER OR UNDERCHARGED WITH WATER,

and they consequently register the quantity of Gas consumed with greater accuracy than Meters in which the Water-Line is variable.

MANUFACTURED BY

CROSLEY & CO.,

GAS-METER MANUFACTURERS,

103, SOUTHWARK BRIDGE ROAD, LONDON.

N.B. The Patent Self-Adjusting and Compensating Apparatus may be applied to the ordinary Meter.

Manufacturers of LOWE'S PATENT MOTIVE-POWER METER, for situations where there is an inadequacy of pressure to supply the special requirements of certain consumers in low grounds during the day or night.

Also, Manufacturers of EXPERIMENT METERS, GASHOLDERS, GOVERNORS, MINUTE-CLOCKS, PHOTOMETERS, &c. &c., similar to those used by Mr. King, of Liverpool.

C. and Co. are the only house in the trade which has for years manufactured Meters according to the standard measure set forth in the 2nd Section of the "Sale of Gas Act," and which also comply with the rules laid down in the Section for testing meters. Purchasers of C. and Co.'s Meters may therefore be secured against any additional expenses being incurred in order to adapt their Meters to the requirements of the new Act.

WILLIAM PARKINSON AND CO.,

(SUCCESSORS TO THE LATE SAMUEL CROSLEY,)

COTTAGE LANE, CITY ROAD, LONDON, E.C.,

PATENTEES AND MANUFACTURERS OF

GAS-METERS, GOVERNORS, AND OTHER APPARATUS;

ALSO,

METERS FOR MEASURING WATER, &c., &c.

IMPROVED LOW-SPOUTED GAS-METERS,

Which completely meet the requirements of Lord Redesdale's Sale of Gas Act, and are as simple in their construction, satisfactory in working, and as low in price as the well-known Meters which have been made by W. P. and Co., and their predecessor, Mr. Samuel Crosley, during the last forty years, and of which there are about 300,000 now in use.

STATION-METERS AND GOVERNORS

Of all Sizes, of the best Construction, Materials, and Workmanship, supplied on he shortest notice.

There are about 300 Station-Meters at work of their manufacture, of sizes varying from 750 to 60,000 cubic feet per hour, of which the following are some of the principal ones, recently supplied by them to London Gas Companies, viz. :—

2	for	60,000	cubic feet per hour each to the	Chartered Gaslight and Coke Company, Westminster;
1	„	40,000	„ „	Chartered Gaslight and Coke Company, Brick Lane;
2	„	60,000	„ „	London Gaslight Company, Vauxhall;
1	„	60,000	„ „	Commercial Gas Company, Stepney;
1	„	40,000	„ „	Equitable Gas Company, Pimlico;
1	„	40,000	„ „	Phœnix Gaslight Company, Greenwich,

&c. &c. &c.

And they have also supplied large Station-Meters to the Gas Companies at Birmingham, Nottingham, Sheffield, Southampton, Leeds, Newport, Glasgow, Manchester, Dublin, Cork, and all the principal towns in the United Kingdom, as well as many on the Continent, &c., &c.

Their Station Gas-Governors have been adopted by most of the above-named Companies, and have given universal satisfaction.

PRESSURE REGISTERS, EXPERIMENTAL METERS, PHOTOMETERS,

Minute Clocks, Consumers' Gas-Governors, Pressure-Gauges,

STANDARD EXPERIMENTAL GASHOLDERS FOR PROVING METERS, &c.

GEORGE LOWE'S PATENT NAPHTHA BOXES AND MOTIVE-POWER METERS,

WITH MACHINERY FOR WEIGHTS TO ASSIST THE SUPPLY OF GAS WHERE THE PRESSURE IS LOW.

SPECIFIC GRAVITY APPARATUS, RAIN GAUGES, &c.

JAMES OAKES and CO.,
ALFRETON IRON WORKS, DERBYSHIRE,
AND
WENLOCK IRON WHARF, 20, WHARF ROAD, CITY ROAD, LONDON,
Beg to inform Gas and Water Companies and the public, that they keep in stock in London all the CASTINGS in general use in Gas and Water Works, including best cold-blast Iron Retorts, Socket and Flange Pipes of all sizes, Bends, Branches, Syphons, Lamp Columns of various patterns, &c.
N.B.—Orders for Cast-iron Tanks, Girders, Columns, Cylinders, and all irregular castings, will have immediate attention.
CHARLES HORSLEY, Agent.
C. H. is prepared to carry out the warming and ventilation of public buildings, &c.; also civil engineering in general.

F. & C. OSLER,
45, OXFORD STREET, LONDON;
Manufactory—Broad Street, Birmingham—Established 1807,
MANUFACTURERS OF GLASS CHANDELIERS, GLASS LUSTRES, TABLE GLASS, &c. &c.
ELEGANT CRYSTAL GLASS CHANDELIERS, for GAS, from £4 upwards (Made from "REGISTERED" DESIGNS), with GLASS BRANCHES, &c.; suitable for DRAWING-ROOMS and BALL-ROOMS. The more extensive use of GAS in private dwellings has induced Messrs. OSLER to direct their particular attention to the manufacture of this class of articles—which, with a view to their general adoption, are offered at very moderate prices. Purchasers can select from a great variety of patterns, to which additions are being constantly made.
THEATRES, CONCERT, ASSEMBLY, AND BALL ROOMS LIGHTED BY ESTIMATE ON THE LOWEST TERMS.

JAMES MEACOCK,

PATENT DRY AND WET GAS-METER MANUFACTURER,

7, SNOW HILL, AND 16, WEST STREET, LONDON.

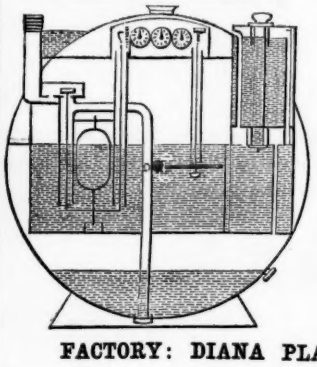
ESTABLISHED 1836.

J. M. invites attention to his Improvements in EXPERIMENTAL WET GAS-METERS, by which he renders impossible any Leakage from the Stuffing-Box.

These METERS are GUARANTEED to meet all the REQUIREMENTS of the SALE OF GAS ACT.

GOVERNORS, STATION-METERS. PHOTOMETERS,
EXPERIMENTAL TESTING GASHOLDERS, HIGH-PRESSURE GAUGES,
AND ALL APPARATUS IN USE AT THE GAS MANUFACTORY.

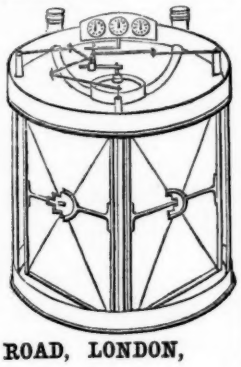
PATENT WET METER.



N. DEFRIES,

CONSULTING GAS ENGINEER,
Inventor and Patentee
OF
WET GAS-METERS,
WITH SELF-ADJUSTING WATER-LINE;
DRY METERS,
GAS-HEATING BATHS, OVENS, STOVES,
GAS FIRES with INDESTRUCTIBLE FUEL,
&c., &c.

PATENT DRY METER.



FACTORY: DIANA PLACE, FITZROY SQUARE. OFFICE: 406, EUSTON ROAD, LONDON,
Eight Doors from Factory.

Attempts having been made to construct Self-Supplying Apparatus to Wet Gas-Meters upon the Bird Fountain principle,—which, although unerring to supply water in the open atmosphere, has not wholly succeeded so as to be relied upon when enclosed in a Gas-tight Meter Case,—N. DEFRIES begs leave most respectfully to acquaint Gas Companies, and the Public in general, that he has constructed his PATENT WET GAS-METER upon a method entirely different, being founded on the well-known principle of the self-acting supply of the Oil Lamp, which has never been applied for the adjustment of the Meter Water-Line before, and which, by the admission of external air to a chamber sealed from Gas, will never fail to faithfully perform its required function. They are of the very best materials and workmanship, will stand more pressure than is required as the test for soundness by the New Act, are guaranteed to prevent surreptitious burning without detection, and will be kept in repair free of charge for seven years.

N. DEFRIES'S CELEBRATED DRY METERS,

of which more than 80,000 are in use in Palaces, Churches, Chapels, Royal Dockyards, Club Houses, Public Offices, and other Buildings throughout the Empire and Continent, which have done so much in checking surreptitious burning, and simplified the fitting up of Gas.

To remove any doubt of accuracy of measurement his Meter for 1500 lights, in use upwards of ten years at the Royal Italian Opera, until that Building was destroyed by Fire, was long afterwards dug out of the burnt ruins, then tested by the Chartered Gas Company in the presence of George Lowe, Esq., F.R.S., and other Chief Officers, and found inflexibly correct. Also, on the 9th of June, 1858, at the Western Gas-Works, his Meter for 150 lights, after considerable use, was doubted, and subjected to the most variable tests—from the full lighting to a single Jet—and in each case, as in other instances, accuracy was finely indicated.

As to durability, his two large Meters at the Thames Tunnel have been in use night and day for upwards of twelve years—one continuation of dark hours—subjected to the wear and tear of seventy-five years as compared with the ordinary business hours of using Gas above ground.

LORD REDESDALE'S SALE OF GAS BILL.

All Meters constructed by N. DEFRIES are guaranteed to pass the Provisions of the Standard.

No alteration has been necessary in the Meters he continues to supply to the Chartered, Imperial, City of London, Equitable, and other large Companies, his accustomed range of 1 per cent. over and under meeting all the desired requirements; whereas, by the New Act, a greater departure from accuracy—viz., 2 per cent. fast to 3 per cent. slow—is permitted.

FIRE-CLAY GAS RETORTS.

ESTABLISHED IN 1795.

JOSEPH CLIFF,

WORTLEY FIRE-BRICK WORKS, near LEEDS.

THESE RETORTS are unrivalled in excellence, being the BEST FINISHED INTERNALLY, and THE MOST CORRECT IN FORM, of any in the Kingdom. From the peculiar composition used in working up the face of the material, they are rendered unusually smooth, close, and FREE FROM SURFACE CRACKS, thus, in a great measure, preventing leakage and the adhesion of carbon to their interior surface.

To meet the yearly increasing demand of UPWARDS OF THIRTY SEASONS and to carry out the late improvements in the manufacture, the Premises have been re-erected and much enlarged, and Engineers may rely WITH CONFIDENCE on their orders being completed with a greater regard to despatch than by any other House.

THE WORKS ARE WELL SITUATED

For EXPORT from the Ports of { LONDON, LIVERPOOL, HULL, MIDDLESBRO', HARTLEPOOL, and STOCKTON.

FIRE-BRICKS, LUMPS, GUARDS, TILES, AND CLAY OF THE SAME QUALITY.

M. B. NEWTON, London Agent, No. 4, Wharf, King's Cross Goods Station.

J. CLIFF'S Fire Bricks, Clay RETORTS, &c.

Orders for London and South of England to be addressed to Mr. NEWTON, Agent for the District, 16, Castle Terrace, New Hampstead Road, KENTISH TOWN, N.W.

N.B.—A few Retorts of each size, and a large stock of Bricks and Lumps, always on hand at the above Wharf.

WROUGHT-IRON Guides for Gas-HOLDERS, when Trussed upon scientific principles, are more capable of resisting strains, in every direction, than Cast Columns of any form can be; and weigh only one-fifth as much as the latter. Designs and Working Drawings for Guides and Ties can be obtained of the Inventor, CHARLES DIXON, C.E., Chichester, SUSSEX.

NOW READY,

VOL. VIII. of the JOURNAL of GAS LIGHTING, WATER SUPPLY, and SANITARY IMPROVEMENT, for 1859, price 21s., bound in cloth and lettered. A few copies of Vols. II., III., IV., V., VI., and VII. are still on sale.

W. B. KING, 11, Bolt Court, Fleet Street.

Just Published, Price 1s.; by Post, 1s. 1d.,

A LETTER to the Secretary of STATE for the HOME DEPARTMENT on the SUPPLY of GAS in the METROPOLIS.

By THOMAS G. BARLOW, C.E.

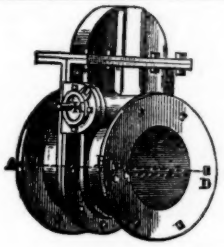
W. B. KING, 11, Bolt Court, Fleet Street, LONDON.

COUNTY and GENERAL GAS CONSUMERS' COMPANY (LIMITED).

Notice is hereby given, that the DIVIDEND on the paid-up capital of this Company, for the half-year ending 31st December, 1859, at the rate of 5 per cent. per annum, will be PAYABLE on and after the 31st of March instant, between the hours of 12 and 2 daily, at the offices of the Company, 76, King William Street, E.C.

By order, R. S. PARKER, Secretary.

London, March 2, 1860.



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keep always on stock their

IMPROVED GAS VALVES

from 2 inches to 18 inches, price 11s. 6d. to 13s. 6d. per inch diameter

List of prices, with full dimensions of all sizes up to 27 inches, to be had on application.

These Valves are all proved to 30 lbs. on the square inch before leaving the works.

BRYAN DONKIN & CO.,

ENGINEERS,

NEAR GRANGE ROAD, BERMONDSEY.

BIRTLEY IRON WORKS, CHESTER-LE-STREET, DURHAM.

Manufactory for every description of Casting and Machinery for Gas Works and Water Works.

Warehouse in London for Cast-iron Pipes and Connections of all sizes and in any quantity, Scott's Wharf, Bankside, Southwark.

Office in London, Mr. E. M. PERKINS, 78, Lombard Street.

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BEST CLASS-HOUSE POT AND CRUCIBLE CLAY.

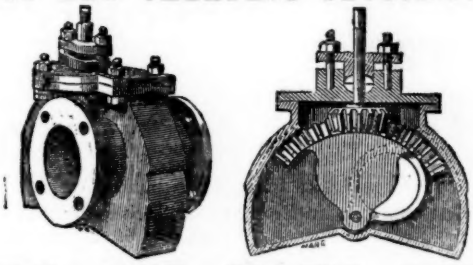
MANUFACTURERS OF

FIRE BRICKS GAS RETORTS &C.

AMBLECOTE FIRE CLAY AND BRICK WORKS, STOURBRIDGE.

Late in the occupation of I. and W. King. Originally J. Pidcock, Esq.

BEST AND CHEAPEST SLUICE-COCK.



BROWN AND MAY'S PATENT.

Above 3-inch diameter, price 10s. per inch. Brass face, 6d. per inch extra.

Can be taken to pieces without being removed from the line of Piping.

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WILLIAM INGHAM AND SONS,

WORTLEY FIRE-BRICK AND RETORT WORKS,

Near

Leeds.

W. INGHAM and SONS, having for many years been extensively engaged in the Manufacture of

RETORTS AND FIRE-BRICKS FROM THE CELEBRATED WORTLEY FIRE-CLAY,

beg to call especial attention to their RETORTS, which have for many seasons proved to be unsurpassed in quality by any in the Kingdom, their FREEDOM FROM CRACKS and the ADHESION OF CARBON rendering them worthy the attention of all parties interested in the making of Gas.

The Works are of such magnitude as to ensure the prompt execution of orders to any extent.

Estimates for Setting, or Bricklayers sent when required.

GAS OVENS IN SEGMENTS OF EQUAL QUALITY.

London Agents: CHADWICK and AKEROYD, Willington Stone Wharf, Regent's Park Basin.

A large stock of Fire-Bricks, Fire-Clay, Terra Cotta, and Drain-Pipes of all sizes kept in London at CHRISTIE & CO.—Wharf, 64, Bankside, Southwark, where all particulars of Prices, &c., may be obtained.

N.B.—*Export orders continue to have prompt attention.*

SALE OF GAS ACT.

MESSRS. CROLL, RAIT, AND CO.,

Manufacturers of Croll's Patent Improved

DRY GAS-METER,

Also Manufacture and Supply

TEST GAS-HOLDERS,

And other Apparatus required by the Inspectors appointed in pursuance of the above Act.

Application for particulars to be made to the Factory,

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ALEXANDER WRIGHT,

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MANUFACTURER OF

CONSUMERS' WET GAS-METERS,

Of the best material and workmanship, carefully adjusted to meet the requirements of the SALES OF GAS ACT.

CONSUMERS' COMPENSATING GAS-METERS,

Which have secured the highest approbation and patronage, on account of their simplicity of construction, thorough efficiency, and moderate price.

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Of all sizes, constructed with the most careful regard to durability, accuracy, and freedom from excessive friction. A LARGE NUMBER are in use, and give perfect satisfaction.

EXPERIMENTAL TESTING APPARATUS,

COMPRISING

PHOTOMETERS, SPECIFIC GRAVITY APPARATUS, BI-SULPHURET OF CARBON TEST, THOMPSON'S BROMINE AND HEATING POWER OF FUEL TESTS, IMPROVED ALKALIMETER, EXPERIMENTAL METERS AND GOVERNORS, MINUTE CLOCKS, &c., &c.

These apparatus are employed by the best experimenters in this country and on the continent, and by nearly all the Gas Companies in London, for the use of the appointed testers in the various districts.

WRIGHT'S REGISTERING PRESSURE-GAUGE,

Is universally used, and affords valuable aid in effecting a due regulation of pressure, thereby saving much of the leakage arising fromheavy pressures when the consumption is decreasing.

WRIGHT'S EXHAUSTER REGISTER and REGULATOR,

are of the highest utility, as by the one a due check is maintained on the working of the Exhauster, and by the other all possibility of excessive exhaust is avoided.

TEST GASHOLDERS,

Of all sizes, of the most perfect character, accurately graduated to the Exchequer Standard.

Consumers' Governors; Inspectors' Pocket, King's, and all other kinds of Pressure-Gauges; Thermometers for Condensers, &c., &c.

"Analysis of Gas for Practical Men," by A. WRIGHT, M. Inst. C.E., post-free for 13 Stamps.

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PATENTEES and MANUFACTURERS of the ONLY GOOD MERCURIAL GAS REGULATOR,

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London: Printed by WILLIAM BOUGHTON KING (at the office of Joseph Clayton, 17, Bouverie Street, Fleet Street); and published by him at No. 11, Bolt Court, Fleet Street, in the City of London.—Tuesday, April 10, 1860.